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ABSTRACT

This report, one of a series of case studies on innovation in higher education, presents a detailed description and evaluation of the innovative features of three German universities, as well as a brief survey of the German national policy situation with regard to higher education. Of the three, the two at Bochum and Konstanz are new foundations, whereas at Aachen philosophical and medical faculties have recently been added to a traditionally technical university. Part I of the report discusses the general context of the study, including the selected institutions, their place in society and the national educational system, and the factors and circumstances which led to the creation of the new institutions. Part II presents a problem oriented analysis of the different facets of the institutions, including the problem of coping with numbers, providing equality of opportunity, the content and structure of studies and interdisciplinary approach, specialization, organizational structures, recruitment and status of teachers, teaching and research, organization and methods of teaching and student-teacher relations, roles and status of students, evaluation and planning, and cost and financing. Part III, the conclusions, deals with the motivations for innovation, and innovation in the various parts of the academic community. (AF)

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CASE STUDIES
ON
INNOVATION IN HIGHER EDUCATION

three german universities
AACHEN, BOCHUM, KONSTANZ

by

E. BÖNING and K. ROELOFFS

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- *to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.*

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FOREWORD

Whereas in the nineteen-fifties and the early sixties, the notion of "educational investment" attracted the greatest attention, it is now increasingly recognized that educational systems in general, and higher education in particular, cannot adequately respond to the needs of the economy and society unless they are subjected to more or less profound adaptations implying equally important innovations. Thus, in many ways, "innovation" becomes the key concept in the development of education of the present and coming decades.

Innovation is not of course required or advocated for its own sake, but should be understood as a means for fulfilling functions or resolving problems of an urgent nature and which have so far been neglected. The term "innovation" as it is used here, and as distinct from "change", implies therefore purposeful orientation.

The subject covers a very wide range of topics. Innovations in practically all educational domains can be considered: curriculum, teaching methods, internal structures, administration, equipment, etc. Obviously, no single study can cover more than a fraction of this vast area and an appropriate delimitation of the field of inquiry is indispensable. It was therefore decided that a set of case-studies on innovations as introduced by a representative sample of major overall reforms of higher education and in some of the newly created universities represented the most suitable approach to a study of this problem.

It does not follow that a new university is necessarily an innovating university, or that an overall reform need be, in all circumstances, of a radically innovating nature. Furthermore, many important innovations — of curricula or of teaching methods for example — can be and are being introduced in existing universities and without calling for the promulgation of an overall reform. The fact remains, however, that in most cases these are the two basic tools used to implement innovation in the system as a whole or in some of its parts.

It is in this context that the OECD Committee for Scientific and Technical Personnel decided to include in its current programme a number of case-studies concerning problems of innovation in higher education in Member countries.

The present volume is one of a series of case studies on innovation in higher education published by the Organisation. It expresses the views of the authors and not necessarily those of the Organisation or the German Government.

COMMON OUTLINE FOR THE PREPARATION OF CASE-STUDIES

The following general guidelines were given to the authors:

1. The case-studies should not be developed in terms of mere descriptions (of a particular reform or institution) or historical accounts; *they should be analytical and endeavour to present a critical examination,* the responsibility for which shall lie with the respective author(s).

2. The case-studies should represent a combination of an *institution- and problem-oriented approach* centred around the phenomenon of innovation. It is not the new institutions or reforms *per se* which should be reviewed and analysed and the case-studies should not engage in a theoretical discussion on problems of higher education, but emphasis should be put on the question of how the selected institutions or reforms innovate with regard to the particular problems of the common outline.

3. Each of the case-studies should deal with only a limited number of institutions or reforms, although in some cases a wider area may have to be covered, i.e. the inclusion of innovations taking place within other institutions, old or new. Such an extension would be justified in particular if the selected new institutions or reforms do not provide a sufficiently representative and significant picture of the innovating process as a whole.

4. Particular attention should be paid to innovations which have been in operation sufficiently long to provide the necessary elements for an adequate evaluation of their effectiveness. This evaluation should deal both with the intended and the unpredicted effects of the innovation. Where the time-factor does not allow for such evaluation, the analysis should concentrate on the declared or implicit intention of the innovators and also on any public discussions they may have generated.

5. An analysis should be made of the rationale behind all of the innovations and consideration given to such questions as to who were the initiators and what groups or factors provided support for or resistance to the innovations.

6. The common outline should be considered as a flexible framework; authors remain free to decide where, in view of the case considered and of its specific national or local context, the emphasis should lie, which points should be developed in depth and which should be discussed only briefly or omitted altogether. Many, if not all, of the points of the common outline are closely interconnected, possibly even overlapping. Given the

nature of the subject, these interconnections are inevitable and their analysis will throw light on the innovating process as a whole.

The following common outline was suggested to all authors of case-studies on innovation in higher education, as undertaken within the programme of OECD's Committee for Scientific and Technical Personnel (CSTP). This outline was drawn up at a meeting of the Secretariat of OECD and the authors of the first five case-studies in May 1967.

A. *INTRODUCTION*

Specific objectives, scope of study, methods and data used, limitations.

B. *GENERAL CONTEXT*

i) Short overall description of institutions or reforms selected for study;

ii) Their place in the global context of the society and of the education system of the country concerned (including considerations on the status of the new institutions in relation to older establishments, e.g. problems of " upward mobility " of institutions of higher education),

iii) Factors and circumstances which led to their creation or promulgation; initiators, protagonists and supporting groups; resistance and opposition.

C. *PROBLEM-ORIENTED ANALYSIS*

a. *Coping with Increased Numbers*

There can be not doubt that this is the most important problem in the development of almost all higher education systems. In the framework of the case-studies questions of the following type should be examined:

- To what extent and in what sense was the promulgation of reform X – the creation of Institution(s) Y – directly motivated by the need to cope with the past or projected quantitative expansion of enrolments? (Was the pressure of numbers a primary or a secondary motive?) What statistical evidence can support the answer to this question and how has implementation of the reforms – or the building-up of the institution(s) – responded to original quantitative expectations?
- In case-studies on new institutions the problem of *size* should also be examined: what rationale, and other factors, determined the decision on the size of the new institution(s)? How is the problem of numbers being solved within the framework of the new institution(s) (e.g. subdivision of the institution in smaller more or less autonomous units as in the British collegiate or in the American cluster-college system)? What is the actual and projected rate of growth (slow or fast) of the new institution(s) and on what rationale is this growth rate based?
- In what way has the policy concerning the size of new institutions been translated into new architectural and building concepts?

b. *Equality of Opportunity*

The higher education systems of all OECD countries have to respond not only to the sheer pressure of numbers but also to the requirements of a more equal participation of the different social classes and population

groups, of a better geographic distribution (regional), and of a better participation according to sex.

- To what extent do the analysed institutions or reforms provide new answers to these preoccupations? More specifically, have the reforms or the institutions under review been innovative with regard to admission requirements (problem of access to higher education), with respect to scholarship and other student welfare policies? Have any new measures been introduced facilitating not only access of students from under-privileged classes or population groups to higher education but also strengthening the chances of success of these students? To what extent does the location of new institutions respond to requirements of a better geographic distribution of post-secondary establishments (problems of the "university map")?

c. *Content and Structure of Studies, Interdisciplinary Approach*

Problems falling under this heading are widely discussed, and new solutions are being introduced, in all OECD countries. In a certain sense it might even be said that the most striking features of new institutions of higher learning, i.e. the most apparent deviations from the traditional pattern, lie in this field: creation of interdisciplinary programmes, combined degrees; obligation or possibility for students to take courses belonging to different disciplines (major, minor or supporting subjects); obligation or possibility for teachers to belong to two or more constituent units of the University, etc.

- What is the rationale behind this type of innovation introduced by the new institution(s) or reform(s)? How were the programme, plan and length of studies changed (curriculum reform)? Has a new pattern of examinations (degrees) been developed? Does the available experience show that original expectations could be fulfilled? What difficulties arose and/or how was the arrangement transformed under the influence of unforeseen factors and circumstances?
- Did the new curricula and the new structures of studies bring about new architectural and building concepts? Did they have an influence on a better utilisation of buildings?

d. *Specialization of Institutions of Higher Learning*

The question is more and more widely raised as to whether a single institution of higher learning can offer courses in more than a few subject areas. In particular, many of the new universities try to specialize in a limited number of areas. At the level of higher education systems as a whole, the issue is not only specialization by field of study but differentiation according to levels, geographic location and functions (e.g. creation of short cycle higher education).

- Has such a type of specialization taken place in the institutions under review and, if so, what were the criteria for the choices made? Is there any relation between a particular specialization and the geographic location of a given new institution?
- Do the analysed overall reforms contain any significant proposals such as the creation or strengthening of a new type of higher education

functionally differentiated from the traditional types, and what were the rationale and the factors which led to the solution adopted?

e. *Organisational Structures, Institutional Autonomy, Administration and Management*

In many countries the existing organisational structures (e.g. division of universities into faculties) are considered as totally inadequate and innovations in this field, together with those concerning the inter-disciplinary approach, appear usually as the most revolutionary aspect of the new institutions. Related problems concern responsibilities of members of the academic staff, administration and management of institutions of higher learning as well as problems of institutional autonomy, of academic freedom and of State-University relations.

- What new organisational structures have been introduced (horizontal and vertical units and their interrelations)? What is the degree of organisational autonomy of the new units (on the one hand, internally, within the framework of the institution, and, on the other externally, in relation to the outside world?
- What new approaches, if any, have the new institutions or the overall reforms developed towards the perennial question of university autonomy? Have the new institutions or reforms developed some new type of relationship between State and University, and if so, what were the consequences in the field of coordination of the new institutions with the rest of the higher education system? Have the new teaching methods or the new content of studies in some way modified the traditional concept of individual academic freedom ("Lerfreiheit")?
- How have the roles (authority, rights and responsibilities) of the various categories of the academic staff, (heads of department, chair holders, middle and junior staff level) been modified as compared with the traditional patterns? Can one speak of a new role of the faculty in the decision-making process in general and in the process of innovation in particular?
- What new administrative mechanisms have been set up? Are new scientific methods of administration (e.g. computer techniques) being extensively used?

f. *Recruitment and Status of Teachers*

For many countries the lack of qualified teachers represents the major bottleneck in the present and future development of higher education. A solution to this problem might depend, to a large extent, on better recruitment policies, improved salary conditions and career prospects. A related issue arises in connection with the instructional effectiveness of university teachers, and the criteria used for the appointment of such teachers.

- Have the institutions or reforms under review introduced new solutions in this field? Are candidates for teaching jobs sought outside the sectors which were traditionally supplying academic personnel (e.g. in industry)? Are conditions of employment of foreign teachers made easier? Have minimum academic requirements for employment (degrees, publications) changed and have criteria of teaching performance been adopted in the selection of staff?

g. *Teaching and Research*

One of the major criticisms made of higher education in most of the OECD Member countries refers to the balance between its teaching and research functions, to insufficient linkages between the two, to inappropriate conditions in which one or the other (if not both) have to be pursued and, implicitly or explicitly, to the connected problems of relations between under-graduate and graduate studies. Innovations in this area may pertain to numerous aspects and organisational components of the higher education system.

– How, in general, is the relationship between teaching and research and between under-graduate and graduate studies envisaged in the new institutions or reforms? What practical measures have been taken in the field of curriculum and degree requirements to implement these general principles? What arrangements have been made with a view to integrating (or differentiating) the teaching and research functions of the academic staff? If, in the older establishments major differences exist in prestige and working conditions between those occupied mainly in teaching (of under-graduates) and those in research (or work with graduates), have the new institution(s) or reform(s) changed this situation? How do enrolment growth rates (actual and projected) at the under-graduate level compare with those at the graduate level? Have any special arrangements been made to promote fundamental research as distinct from applied research? Is there any special effort being made with a view to training research workers ("teaching of research")? If the institutions and reforms under review are fostering research contracts with outside bodies (government, industry), what are the overall effects of this new relationship which is thus being built into higher education establishments?

h. *Organisation and Methods of Teaching; Teacher-Student relations*

It is very often said that one of the major weaknesses in present higher education systems is the lack of contact between professor and student, in other words, the depersonalisation of higher education. Many of the innovations introduced (both by the new institutions and by overall reforms) are intended to remedy this situation. The most obvious solution is to improve the teacher/student ratio, but this, for financial and other reasons, is also the most difficult solution and, in any case, only a partial one. Much will depend on the teaching methods: "cours magistraux", team teaching, tutorial system, seminar and small group work, utilization of new teaching media, the amount of time which the different categories of teachers actually devote to students both within and outside the class periods or formal "office hours", etc.

– To what extent does the teacher/student ratio (overall and by field of study) in the new institutions differ from the ratios in the older establishments? Can a more sophisticated indicator be established, comparing, for the traditional and new institutions, the size of classes, the length of time during which each student is in contact with his teachers, the number of courses (seminars, lectures), given by the various categories of teachers ("density of teaching")? What is the relative importance of formal and informal, organised and unorganised, contact between student and teacher?

- Which of the above-mentioned teaching methods (large-class lectures, seminars, tutorials, etc.) or what combination are given emphasis? Which method or combination is considered most and least effective according to fields and levels of study (optimum size of class)? What role has been assigned to new teaching media? What is the new or proposed structure of the teaching staff (number in senior, middle and junior level categories and their respective roles with regard to students)? What are the new arrangements with respect to student orientation and counselling?
- What physical facilities have been provided to facilitate closer contacts between teachers and students?

i. *Role and Status of Students in the Academic Community*

Two types of problems should be raised under this point: *a*) those concerning the participation of students in the decision-making process within their respective universities or other institutions of higher education, and *b*) those concerning their living conditions, residence, and material welfare in general.

- What innovations concerning these fields have been introduced in the institutions or reforms analysed? Are the new institutions deviating from the traditional pattern, for example in respect to the role of students in the determination of the structure and content of programmes or of admission requirement? What mechanisms are being used to ensure increased student participation in the decision-making process? Did these innovations have any important effect on the phenomenon of "students' unrest"?
- To what extent do students participate in the innovation process itself; by what means?
- What was the rationale for deciding that the institutions under review should be resident or non-resident establishments, with or without a campus? Why has a particular type of residence (e.g. collegiate versus simple hall of residence) been adopted. How has the relation between resident and non-resident students been solved? How have the connected architectural and building problems been solved? What other innovations have been introduced concerning the material conditions of students (part-time employment, loans)?

j. *Higher Education and the Outside World*

In many countries a major complaint about higher education is the latter's relative isolation from the outside economy and society in general, and from industry in particular. Modern higher education establishments should in this respect fulfil, it is said, several types of functions all of which, in a certain sense, may be grouped under the heading "Public Service Concept". This implies a more active role in such areas as adult and continuing education, extension services, research contracts with government and industry, etc. But successful innovations in these fields might often require a radical change in the prevailing idea of the university, i.e. in the concept of its place and role within society.

- Do the new institutions or reforms embody a new concept of the functions of higher education within society?

- What contacts have been established between the new institutions of higher learning and the surrounding community? Which groups and sectors of the economy and society appeared as most (least) willing to enter into co-operative arrangements with the new institutions? To what extent and in what way could the new institutions find support (e.g. research grants, scholarships, equipment) in industry and, *vice versa,* what new services are they providing for industrial firms (e.g. refresher courses)?
- Has a new approach to adult and continuing education been developed?
- Have extended linkages with the outside world led to any unforeseen problems and difficulties? Did the creation of the new institutions have a latent stimulating effect on the surrounding community (not directly related to the organised and institutional contacts, e.g. creation of various new services, shops, cultural activities, entertainment)?

k. *Evaluation and Planning*

Need for improvement in these areas is felt very widely. New techniques are being developed (e.g. systems analysis) and special mechanisms are being built into new institutions or reformed systems (planning and/or evaluation units) in order to fulfil this need.

- What are the respective solutions implemented in the institutions or reforms under review? Is self-evaluation and self-study considered as an integral part of the administration and planning of the new institutions? What difficulties had or have to be overcome in order to strengthen the planning process (at the level of the institutions or of the system)? What measures, if any, have been taken to ensure compatibility between institutional and national planning objectives?

l. *Cost and Financing*

Most if not all of the innovations analysed have cost and financial implications which should be examined. This can be done either in connection with almost all the eleven preceding problem areas or under a special separate heading. If the former solution is adopted, there should be a summing-up section on this point. The types of questions to be raised in both instances are as follows:

- Have the different innovations generated additional or increased expenditure or, on the contrary, have they produced savings or decreased unit costs? Have they made new financial resources available (e.g. innovations in the field of university-industry relations)? How do the overall costs and financing mechanisms of the new institutions compare with those of the older establishments?

D. *CONCLUSION*

Summary of main findings of the study with particular reference to the most important innovations encountered.

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AUTHORS' NOTE

The purpose of this study - to furnish information as a basis for evaluation and comparison with other countries - called for a brief survey of the German national policy situation as background for a detailed description and evaluation of the innovative features of three selected universities. In this attempt, we have encountered two principal difficulties.

The first was foreseen and will apply to the parallel studies of other countries as well: to facilitate a comparative evaluation, a common outline was agreed upon, but at best it can be only a compromise of the ideal outline for each individual study.

The second difficulty applies, in particular, to the German study and, while it might have been sensed, could not be clearly foreseen at the time we were given the assignment in late spring of 1967: the main body of this paper was drafted during late 1967 and early 1968. This was a time during which development in German higher education acquired a momentum which to chronicle in all details would have required more time and space than available. We have tried to keep up with this development by re-thinking and revising the draft, but in view of the general atmosphere of policy debate and activity on the national scene, a number of details and comments will certainly become out of date or invalid during the time between last revision and completion of the editing process.

The main measures and proposals which are the milestones of the most recent development do not apply to an individual university, but to the entire national system of higher education. They do contain, however, a large number of features that have already been tried out at Konstanz or Bochum. A survey of the main points in the recent higher education policy debates has been added in the last section of Chapter III[1].

*1. The summer and autumn of 1968 have witnessed some further interesting developments on the university scene. Again they do not apply so much to the three universities that are under special review here, but to an overall reform of university structure, organisation, financing and planning through state (i.e. Federal and Laender governments) legislation. In its latest stages - by the end of 1968 - the development has culminated, though by no means come to a definite close, in a number of state university laws that are or will soon be before the parliaments. Some of the main principles of these laws may be taken as the foreseeable outcome of the development surveyed in this case study, and in many cases the "pilot function" of the samples of innovation described here is obvious (cf. especially Part III). The outstanding new feature, with far reaching consequences right down to secondary education, is the plan to move a number of institutes for advanced vocational training (e.g. the colleges of engineering) with regard to entrance qualification, legal status, etc., into the Higher Education sector ("Gesamthochschülbereich"). The same principle was already advocated in the "Dahrendorf Plan" (cf. p. 37, though there are considerable differences in detail. Full consideration of these developments would have required a revision of the whole text and thus resulted again in a delay in the editing process; this means that, in the meantime, the new version would again be behind the course of events. We have therefore limited ourselves to adding, in the last weeks of 1968, a few footnotes to point to the most important features of that development (marked by an asterisk in addition to the number) and an addendum to Section E of Part III ("The Present Situation").

We have, throughout the report, aimed at meeting the purpose of this study as outlined above, rather than at giving a complete and scholarly description and analysis. This purpose, as we saw it, implied that the reader was to be the interested foreigner rather than the informed compatriot.

It would be impossible to mention here all those persons - professors, students and university officials; representatives of public administration and academic organisations - who, through providing information, suggestions and criticism, have made this study possible. We express our gratitude to all of them. At the same time, it should be clearly understood that this study is not a presentation of the views of, nor has it been submitted for approval to, any of these persons or organisations. The responsibility for any shortcomings rests solely with the authors.

Part I

GENERAL CONTEXT

A. INSTITUTIONS SELECTED FOR STUDY

The following institutions have been selected for the case study on innovation in higher education in the Federal Republic of Germany:

- "Ruhr-Universität Bochum" (University of the Ruhr at Bochum, Land Nordrhein-Westfalen);
- "Universität Konstanz" (University of Konstanz, Land Baden-Würtemberg);
- "Rheinisch-Westfälische Technische Hochschule Aachen" (Technical University of Rhineland-Westfalia at Aachen, Land Nordrhein-Westfalen).

Bochum and Konstanz are new foundations, whereas at Aachen philosophical and medical faculties have recently been added to a traditionally technical university.

Plans of the Nordrhein-Westfalen Government and Parliament to found a new university in the Ruhr district date back to May, 1960, before publication of the "Wissenschaftsrat" (Science Council WR) recommendations for the establishment of new universities. When those recommendations, discussed in detail below, were published later in 1960, they expressly welcomed the Nordrhein-Westfalen plans; on 18th July, 1961 the Land parliament formally decided that the new university should be located at Bochum[1].

With some buildings ready, the university accepted its first students in the autumn of 1965; at the beginning of the 1967-68 winter semester, there were about 6,000 students and 132 full professors[2] in a total academic staff of about 500 (including assistants). According to present plans, the university will eventually accommodate 18,000 students and have about 250 full professors.

The Ruhr University does not represent an entirely new university concept in Germany, but a number of innovations are being put into practice which continue to attract general interest. For this study, it offers the additional advantage of being in operation long enough to evaluate the original concept in the light of practical experience. The essential characteristics of this new establishment will be discussed in detail in Part C; they are only mentioned here:

- The Ruhr University follows tradition in comprising all academic disciplines normally represented at a university; in addition, however, it includes engineering and technology which so far have been

1. The strongest rival, the city of Dortmund, was to get a new technical university; in the meantime, plans for Dortmund have been expanded into those for a full university. Two more Land university projects exist for Düsseldorf, based on the former medical academy and Bielefeld.
2. Not including professors of theoretical and clinical medicine (located in Essen).

- on the university level - the domain of separate "Technische Hochschulen" (Technical Universities).

- The academic disciplines are not grouped in the traditional form of large "Fakultäten" ("Faculties"), but in smaller "Abteilungen" ("Departments"). The reasons for, and the importance of, this new pattern reach far beyond the organisational and administrative aspects.

- The Ruhr University will be primarily a campus university, a novelty in Germany.

- Entrance requirements, academic programmes and degrees will be roughly the same as at the other universities. There are, however, a number of features in the organisation of the administrative structure and the academic life that are hoped to bring about a closer inter-relation between the various disciplines and between staff and students.

Konstanz University completed its first semester of operation (Winter 1967-68) with an enrolment of 180 students.

The foundation of the university is based on a February 1964 Act of the Baden-Würtemberg Land Parliament. According to present plans, it will be expanded within the next eight years to accommodate 3,000 students with an academic staff of 592 (106 full professors).

Though the plans for Konstanz were developed about the same time as those for Bochum, it differs greatly from the latter and is in some ways more radically innovative in comparison to the traditional German university. The outstanding features are:

- Limited number of disciplines and of students;

- Apointment of a permanent "Rektor" instead of the usual system of electing one of the professors "Rektor" with a one-year tenure;

- New organisation of study programmes and new degrees;

- New institutional and organisational methods for assuring the unity of teaching and research as well as inter-disciplinary projects.

The Aachen "Technische Hochschule" is not a newly-founded institution, but one of the older technical universities of high repute. Its basic structure corresponds to the other universities, but through a recent change, with its implications and possible consequences, the university merits inclusion under the heading of innovations and reform. In the last decade, it has, like other technical universities, gradually expanded to include not only the areas of pure science and the humanities, but also a School of Medicine. Though some of the traditional academic disciplines (e.g. Law, Theology) are not fully represented, this recent development may be considered as,

- for Aachen itself, representing a conscious policy to develop the non-technological sector of the programme;

- for the "Technische Hochschulen" as a group, representing a conscious policy to overcome the traditional barrier between technological disciplines and "university proper" disciplines;

- for university policy as a whole, indicating a general tendency towards the integration of technology into the university proper, on the one hand, and deviating from the traditional concept that every university should cover all fields of scholastic endeavour,

on the other. (Cf. the inclusion of engineering at Bochum and the limitation of disciplines at Konstanz).

Finally, some details of the constitution and the programme of the new medical faculty are of special interest, particularly in view of the establishment of special medical schools in other places (Lübeck, Ulm).

B. THEIR PLACE IN SOCIETY AND THE NATIONAL EDUCATIONAL SYSTEM

None of the three institutions selected for study represents a radically new type of higher education establishment or fulfils a function in society and the national education system that is basically different from that fulfilled by traditional universities. Like all other universities, they are public institutions of the respective Laender[1]. They are financed by the Laender, their budgets determined in detail by public authorities and the academic staff are Land civil servants. The Land Ministry of Education exercises a general policy control, the special legal provisions guaranteeing academic freedom and self-administration notwithstanding. They have the usual admission requirements, curricula and examination requirements are roughly the same, and so are the subjects offered and the basic methods of formal training through lectures, seminars and practical exercises.

The above catalogue, though by no means comprehensive, may be taken as a list of common characteristics of all German universities. It gives the impression of a rather strict uniformity, a narrow frame that leaves little room for experiment, differentiation and innovation. By comparison with the wide range of institutional differences in other national systems, notably those of Anglo-Saxon countries, this impression is valid, and the general question may be raised whether the national university system as a whole might not benefit from the pilot function of a private or otherwise financially and administratively independent university that would be more flexible in trying out new methods. As will be shown later, however, there is no doubt that the existing framework still permits significant reform.

At present, there are some general points to be noted as basic conditions of the national higher education system, especially with regard to development and innovation.

1. The universities are state institutions; as such, they are rather closely tied to the regulations, procedure and control of the public authorities in financial and administrative matters. With regard to the chances and conditions of reform, one consequence is - in the words of a well-known expert on educational policy - that "it is but a very slight exaggeration to say that the only person who can reform a German university is a Minister[2]". It might even be more realistic to say that it would not take one but two Land Ministers: the one for Education and his colleague responsible for Finance.

1. The Federal Republic of Germany (including West Berlin) is composed of 11 Laender, of which only one does not have a university. (Bremen: after several years of stagnation due to financing difficulties, a new university at Bremen is now planned to open in 1971 or 1972).

2. R. Dahrendorf, Konstanzer Blätter. Heft 4 p. 21 et seq., p. 24.

2. The first point must be balanced by reference to the considerable amount of constitutionally guaranteed autonomy, in administration as well as in research and teaching, that the universities enjoy and cherish. It ranges from the special status of the academic staff within the civil service and the freedom of teaching and research to corporate self-administration.

3. The balance of government influence and university autonomy is not just a question of the respective legal positions. Even the Education and Finance Ministers could hardly enforce an important reform measure without the consent and co-operation of the universities. Nor would they be able to ignore for long concerted pressure by the university for certain measures. In fact, the position of the university today as a special kind of pressure group versus parliaments and governments of the Laender and the Federal Republic can be understood from the great prestige of the university and its individual representatives and the increasing general awareness of the importance of science in modern society and the need for greater support and expansion of university facilities.

4. University reform as part of science policy and social policy has, in recent years, become an issue of great political importance in two ways: first, policy-makers have acknowledged the importance of higher education and research for social and economic progress; second, it has, to a surprising degree, attracted general public interest, even to the point of becoming a favourite item for political platforms and campaigns.

5. The public and the information media cannot be, at all times, relied upon for their interest and support by one particular interest group, e. g. the university or the public administration. If one tries to find a general trend in the wide range of divergent opinions, it could be roughly defined as follows: the university is supported in its claims for increased financial support and greater independence and flexibility in the application of public funds; the political side is supported when it criticises the university for its hesitancy and delay in achieving even those reforms that have in principle been accepted, e. g. that of the hierarchical structure of the university, reform of study programmes, and the adaptation of the university to modern needs for inter-disciplinary work and national co-ordination in the installation of costly facilities.

6. Behind this rough division of support and criticism, there is a more subtle and differentiated one which can be found in specialised publications or in meetings of people closely concerned with science and educational policy.

Here, the government side is challenged to develop a coherent science policy concept and the necessary self-confidence, and with highly qualified administrators, to carry it through; the academic side is challenged to accept the need for a national concept which no longer permits consideration of each university as a separate, self-sufficient entity pledged to the ethos of science alone, and the consequences resulting therefrom.

7. Furthermore, the situation and the arguments are often influenced and distorted by a political characteristic peculiar to Germany: the federal structure of the Republic. One of the consequences of establishing the state in 1949 as a Federal Republic was that the individual Laender were invested with what is generally termed "cultural autonomy". This means full authority over the educational system at all levels which, through the years, has become the most frequently discussed, often criticised and jealously guarded of all "state rights".

The primary reason for public impatience - differences in the individual state educational systems - has been somewhat allayed by the establishment of a co-ordinating mechanism among the individual Laender Ministries of Education, though impatience still flares when this mechanism is not successful. The main issue now is that of efficient and co-ordinated policy for university expansion and reform. The proposal to create a national Ministry of Education is made periodically by political groups; it is sure to be welcomed in numerous, "letters to the editor" and refuted by the Laender and the national authorities[1].

The underlying psychological problem is that the constitution does not allow for the possibility of abolishing the principle of the federalistic structure; there is no doubt that a considerable number of those who favour the federalistic structure as a general principle would prefer to see it abolished in the field of higher education. At present, however, "cultural autonomy" is considered as the foundation of the political structure of the Federal Republic. This has far-reaching consequences upon educational policy discussions and measures.

The argument that insufficient national co-ordination in the educational sector might discredit federalism as a principle is stimulus for agreement; another important motive for Laender efforts is the element of competition among the Laender and the desire to prove the adequacy and efficiency of federalistic policy. On the other hand, measures that seem practical and the need for which is obvious (such as financial support of the Bund for science institutes under Laender responsibility) cause great policy problems because the Bund funds might prove a kind of Trojan horse within the walls of Laender independence. The method of a "Verwaltungsabkommen" (Administrative Agreement) between Bund and Laender as autonomous partners has been developed to provide a constitutional framework for Bund-Laender co-operation, but in the case of Bund support for construction of new universities (in addition to the expansion programme for older universities where Bund support is an established practice), negotiations have been going on for years.

It seems now that the problem will be solved by a constitutional amendment known as reform of the financial constitution ("Finanzverfassungsreform") which will provide the constitutional basis for joint Bund-Laender financing of certain projects of national importance, including capital expenditure on universities. Actually, the fact that the needs in the educational sector had increasingly exceeded Laender resources and thus necessitated Bund support (even if that, strictly speaking, went against the constitutional division of responsibilities) was one of the main reasons for proposing the amendment. The bill is, at present, before the national parliament and generally expected to be passed before the end of the present legislative period in autumn, 1969. It calls for Bund and Laender each to provide one half of the funds. Formal responsibility and authority of the Laender will be upheld, but the bill binds Bund and Laender to joint planning on the basis of certain principles for university expansion to be laid down in a special law.

8. Finally, the debate on university structure, reform and innovation seems in Germany more heavily burdened with philosophical principles

*1. At a convention in November, 1968, the CDU (the party whose president is the Federal Chancellor Kiesinger) drafted a new programme in preparation for the 1969 election campaign. Upon a surprise initiative from the ranks, the delegates adopted the demand for a Federal Ministry of Education into the programme. Members of the Federal Cabinet, including those of the CDU, dissociated themselves quickly, Laender protest was united and strong, and the augurs give the plan no real chance but it may well have popular appeal.

than in other countries. The question is asked whether the Humboldt ideal of the university, conceived early in the 19th century, is still valid and, if so, how it can best be realised today. Can, for instance, the Humboldt ideal of the unity of teaching and research still be maintained as a real and workable unit, or is it only a theoretical one? Is it still realistic to claim that the main purpose of the university is to expose the student to the educational influence of science and research, or to teach and train him to qualify for a specific profession? To what extent are higher education and the university to be guided by the socio-economic needs of society and to what extent by the ideal of serving the quest for truth for its own sake? Can the old concept of "Lernfreiheit und Lehrfreiheit" (freedom of teaching and learning) be upheld in the face of the modern need for efficient professional education? Can even the ideal of "Einsamkeit and Freiheit" (solitude and freedom), and the consequent structure of university autonomy and self-administration, be upheld in the face of today's research methods, administrative requirements, and university budgets?

Even in the most one-sided arguments these alternatives are of course not mutually exclusive, but they are likely to make the discussion difficult. One general impression is that the university in Germany is less prepared to acknowledge the needs of society and the economy and to consider them in the development of its programmes and methods than in other countries. In view of the traditional relationship between the political and the academic world in Germany, this is quite understandable. It seems, furthermore, that the above impression is less marked today than a few years ago. At the same time, the discussion seems to become more objective and less burdened by questions of principle. There are probably two reasons for this: one is an improvement in atmosphere, spirit and mechanism for co-operation and mutual understanding; the other, the fact that the seriousness of the problems and the need for coherent policy have become so obvious.

These, then, form the basic conditions of the background against which university policy in general and the position and function of the institutions here under review must be seen.

One important fact is that there is no serious problem of "status" involved, all universities (including the technical universities) having officially and de facto - for the public, the professors and the students - the same status. What differences exist in the relative attractiveness and prestige result from the faculty, institute or individual professor rather than the university. Students are quite likely to change universities one or more times - though this is less common now than formerly - and to identify their academic background by their professors rather than in universities. Thus, the tag corresponding to the Anglo-Saxon "a Harvard graduate" or "an Oxford degree" would be, e.g. "a Heisenberg pupil". The basis is small for status considerations among the new universities.

One factor, however, which applies to both Bochum and Konstanz is what might be called "the pioneer appeal". It certainly applies to the staff, especially to those who are convinced that one of the main obstacles to reform at the traditional universities is the conservative spirit of too many professors and who, therefore, are eager to work at a new university where reform may be facilitated by a more modern organisational structure. The new universities are especially attractive to younger scholars who might otherwise have to wait longer for a suitable vacancy. At Bochum, the average age of the professors is considerably below that at other universities, and for many of them it is their

first appointment. At Konstanz, which is much more markedly a "reform university" than Bochum, the first appointments were a number of younger professors who had played a leading role in the discussion on university reform.

Konstanz was originally conceived by a prominent group of planners to be an even more radically new type of university than it has actually become. The idea was to limit it to a certain number of disciplines and in those to accept a small number of advanced students only, "hand-picked" from applicants from all other universities; the terms used were "research university" or even "elite university" (by the critics), "graduate university" (by its advocates - though the division of studies corresponding to "undergraduate" - "post-graduate" does not exist in Germany). The limitations in subjects remained; the "graduate university" concept was modified. But in its organisational structure, study plans, etc., there remains enough to set it off markedly from any other university, including Bochum. An interesting acknowledgement of this special position was given in late 1967, when the new University Law for the Land Baden-Würtemberg was discussed by the Land parliament: this law regulates the legal position, the relation between university autonomy and state authority, etc., for all institutes of university rank in the Land, with the express exception of Konstanz.

In the case of Aachen, it should be made quite clear that the addition of a medical faculty and the enlargement of the humanities programme in the course of transforming the "technical university" into a "university" is not meant or understood by anyone as a "promotion". The technical universities have long been considered on a par with the traditional universities. Here again, the main considerations for students and teachers are the general attractiveness of the place and the academic and material conditions. Particular features of innovation occur mainly in the organisation of the medical faculty.

In conclusion a general point must be kept in mind if the discussion and development of university reform in Germany is to be properly understood: the position of the German university in society, and its understanding of that position, seem different from those of its English, American or French counterparts.

A critical expression of this difference is that the German university does not sufficiently acknowledge its responsibility to society. But such a statement, besides being a dangerously sweeping generalisation, is one-sided and therefore unfair. The problem is rather that the university understands the responsibility in a different way. It may not, for instance, have the same idea as the general public about what the main needs and interests of society are. It considers its essential function to instill the ethos of scholarship and not just to train students professionally. This question may be argued endlessly in general terms, but the point is that in the discussion, for instance, on length of curriculum and examination requirements, both sides argue in the interest of society.

We shall have occasion in the course of this study to express our feeling that the actual requirements of professional activities and the individual' s as well as society' s interest in earlier entrance into professional life must be considered more strongly by the university than in the past; this is not an argument, however, that economic efficiency should be taken as the main criterion for measuring a university or the value of science and scholarship anywhere.

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C. FACTORS AND CIRCUMSTANCES WHICH LED TO THE CREATION OF THE NEW INSTITUTIONS

In the present situation in Germany, this heading practically calls for a survey of the conditions for and development of reform and innovation in higher education which may serve as a background for the detailed review of the various features of innovation in Chapter II. It further calls for an outline of the origin of the three institutions here concerned.

1. GROWING AWARENESS OF THE NEED FOR REFORM

In any discussion on plans for the creation of new universities in Germany since around 1950, there are two main motives: the desire to realise reforms and the need to meet the pressure of increasing student numbers, i.e. a qualitative and quantitative one. These two concerns have led to the programme of structural change and expansion in existing universities, but it is realised that more satisfactory results can be achieved by founding new ones. In some cases, including Konstanz and Bochum, political prestige for the founding Land and the political parties responsible for the decision is also felt.

It is not possible to weigh the relative importance of these two motives, especially as the qualitative and quantitative problems are closely interrelated and reached public consciousness about the same time. This again had its effects upon the "political prestige" factor. It may be interesting to trace this development briefly.

Demands for reform began to appear almost as soon as the universities re-opened after 1945, and shortly afterwards were discussed in the Westdeutsche Rektorenkonferenz (West German Conference of University Rectors - WRK) as well as among the Education Ministers.

Corresponding to a general trend in the social and political developments of those days, it was to a large extent what might be called "conservative reform", i.e. a return to the ideas, structures and often persons of the Weimar Republic of the 1920's. At the university, this would seem even more justified than in other spheres of national life: it had been a time not only of outstanding scientific achievement, but also of the origin of student associations which shared the responsibility for university affairs; disciplines such as political science, sociology and psycho-analysis - extinct by the end of the Hitler rule - had flourished; even the age-old democratic element of self-government had survived, at least in form.

By the mid-fifties, the situation had somewhat changed. With economic property and the influx of the pre-war baby-boom, the pressure of numbers became a major problem, and expansion of existing facilities and an increased staff - both meaning a struggle for greater allocations in the Laender budgets - became the main concern. Qualitative

aspects were involved - better guidance and control; increase of "Mittelbau" ("medium cadre" staff) for tutoring, guidance, supervision and exercices - but they seemed in the earlier stages somewhat less pressing.

As the analysis of the present situation and future prospects became more sophisticated, the numerical problem became even more serious; at the same time, it was obvious that simple expansion of the existing pattern would be insufficient as well as uneconomic. In addition to the rise in entrance numbers, another reason for, as well as a consequence of, overcrowding was an extension of the average study period in most subjects. Qualitative reform became more and more urgent.

At the same time, the development of certain fields of study and research, notably in the natural sciences, called for a type of work and for facilities to which the traditional structure of the university was not suited. There was, and to some extent still is, the danger that these important research disciplines would establish themselves outside the university. Changes in research organisation, in the hierarchy of staff and in salary regulations were called for to avoid that danger, as well as the related one of losing a large part of highly qualified young scientists to the United States.

By their nature as well as size, these were problems of national importance that went beyond the possibilities of the individual Laender and even of inter-Laender co-operation. Occasionally, radical proposals for shifting the responsibility to the Bund were heard, but they were never seriously considered. Over the years, a mechanism for concerted action between the individual Laender, the Laender as a body, the Bund and the organisation of autonomous universities was developed.

2. THE "WISSENSCHAFTSRAT" AND ITS RECOMMENDATIONS

The "Wissenschaftsrat" (Science Council - WR) was set up jointly by Bund and Laender through administrative agreement in 1957. Though the WR had no executive powers, it has nevertheless proved to be the essential body for guiding, initiating and assessing university expansion and reform on a national scale: as such, it has influenced those universities under special review here. Thus it should be interesting to have a closer look at the organisation and the functioning of the WR.

The WR is composed of two committees:

- The Administrative Committee, which consists of six members delegated by the Federal Government (senior civil servants from the Ministries of Sciencitific Research, Interior, Finance, Transport, Food and Agriculture, Economics) and eleven by the Laender Governments (one from each Land, usually the Minister of Education);
- The Science Committee, which consists of 16 scientists (mostly university professors) appointed by the Federal President on joint recommendation of the two large national science organisations - the Deutsche Forschungsgemeinschaft (Germany Research Association - DFG) and the Max Plank Gessellschaft (Max Planck Society - MPG) - and the Westdeutsche Rektorenkonferenz (West German Conference of University Rectors - WRK) and six leading figures from public life, appointed on joint recommendation of the Federal Government and the Laender Governments (some of these have been representatives of industry).

The terms of reference are:

"i) On the basis of the individual plans prepared by Bund and Laender in accordance with their spheres of responsibility, to develop an overall plan for the promotion of science, to co-ordinate the Bund and Laender plans, and to establish points of special importance and a priority rating.

ii) To establish an annual priority programme.

iii) To make recommendations for the allocation of the funds provided in the Bund and Laender budgets for the promotion of science."

The composition of the WR's two Committees reflects the desire, or the need, to assure a carefully balanced representation of the different groups. It did, in fact, lead to some rather gloomy prophecies that this was the way to ensure inefficiency. The critics were proved wrong. This does not necessarily mean that the principles of composition were ideal, but it does mean they worked. Though neither Bund and Laender Governments nor the universities are legally bound by the vote of their representatives in the WR, such representation worked as a kind of moral obligation and increased the actual willingness to follow suit. Too, it contributed towards making the WR's recommendations realistic and practicable.

With due acknowledgement to the thoroughness, coherence and sensibility of the WR's analyses and recommendations, another condition for success lay in the situation itself. The threat of falling behind in international scientific development became a matter of increasing public concern at the same time the importance of scientific research and manpower for future economic development began to be realised (in particular, the OECD manpower survey had a marked effect in that respect). The Laender Governments were under increasing public and political pressure to do something, and national prosperity made considerable means available. They hesitated to take decisive steps, however, because that seemed a political and academic risk without authoritative support and prior assurance of national co-ordination. The WR recommendations freed latent political interests and energies, as is reflected in the curve of national expenditure on higher education.

The WR has, so far, not followed to the letter its assignment of developing an overall plan for the promotion of science, nor have Bund and Laender provided it with complete plans of their own. While the Council has considered Academies of Science, scientific museums and libraries as well as the large spectrum of non-industrial research institutes outside the university, the universities as centres of research and of education have clearly been the focus of attention.

Structural reform and adaptation to the modern needs of scientific research and education probably are what the WR members themselves would consider their main task, but the emergency of the situation has, in the public eye, given primary importance to their recommendations on expansion. In one sense this seems regrettable, as it tends to create a feeling of satisfaction in view of the sums invested, buildings erected and posts established, while the Council's own warnings that all this might prove futile, if not accompanied or followed by structural adaptation to modern needs, only much later led to real action.

The justification of such warnings, even from the quantitative point of view alone, may be illustrated by several WR forecasts of "Abiturienten" (persons obtaining university entrance qualification), of whom about 80% are expected to enter the university:

FORECASTS	"ABITURIENTEN"	
	1970	1975
1964[1]	57,830	76,060
1967	70,770	95,660

1. "Probable maximum" model B-2.

The 1964 forecast put the total student numbers for 1975 at 264,600; a year later, the capacity target for expansion was raised to 300,000 (not including foreign students). There is general agreement now that this number will be far exceeded. Development plans based on the 1964 forecast are thus clearly insufficient.

The situation is aggravated by the continuing tendency for a large proportion of the student population to spend a longer time at the university (without doing work or obtaining degrees of a correspondingly higher level). In some disciplines, the average duration of studies for students has increased by a full year within one decade. At the same time, it would be cynical to call the high drop-out rate a relief. It has become obvious, then, that expansion alone is fighting a losing battle.

The main concerns of the WR are reflected in a chronological list of its publications dealing with university matters:

1960 - Recommendations on university expansion and development.

1962 - Suggestions on the structure of new universities.

1963 - Recommendations on the planning and preparation of construction projects at the universities.

1964 - University entrance qualifications and student numbers - development and forecast, 1950-1980.

1965 - Recommendations on the structure of academic staff at the university.

1966 - Recommendations on a new organisation of university study programmes.

1967 - Recommendations on university expansion and development until 1970.

These recommendations and suggestions have by no means been realised in full, but they have become the main guide-lines for university development and reform policy. For the political authorities, on Bund as well as Laender level, acceptance has practically been unqualified, the only question being whether, and to what extent, the necessary finances and personnel could be made available.

The fate of the reform recommendations, however, depends on their reception in university organisations - the WRK, the faculty assemblies, the individual universities' senates and faculty committees - and, perhaps even more so, on their reception by the individual

professors. It is much harder to make a general statement on their success or failure. It varies with the subject and the university, and also depends on the observer' s criteria. For most of the main reform measures, votes of approval and support by large academic organisations and individual university faculties can be quoted, and examples of universities where reforms are being implemented can be cited. On the other hand, it seems fair to say that none of the main reforms have, so far, been completely adopted by the universities of the Federal Republic as a body, and the impatience occasionally detected in comments of outside observers and of reform-minded university people is understandable. This tone seems to be noticeable even between the lines of the very carefully phrased retrospective chapters of the 1965 and 1966 WR recommendations.

It may be interesting to review the main publications of the WR that deal with university matters in the order of appearance, because the order, itself, is indicative of the development of university problems and reform thinking. The 1960 volume was the most comprehensive in scope. It dealt with qualitative aspects (structure of academic staff, organisational changes) as well as quantitative ones, but the latter were what generally attracted most attention because of the sheer magnitude of the sums. Even on the manpower side, the increase in personnel as such overshadowed the structural concept behind it (breaking up the monopoly of the institute director or chair-holder through the establishment of parallel chairs; changing the structure of academic teaching and guidance through an unproportionate increase of the "Mittelbau", the medium cadre of academic staff, etc.).

The 1962 volume on the structure of new universities (as "suggestions" rather than the more definite "recommendations") concentrated on reforms where chances to realise them seemed greatest: at the new universities that were still in the planning stage. The proposals for innovation went considerably further than in the preceding volume, and the WR expressly stated that the new universities might serve as test projects before the same reforms were introduced in the older ones.

This was followed in 1963 by an investigation of new methods and planning in university construction. Here again, a good deal of what seemed technical and quantitative detail was based on an underlying reform concept, and full acceptance would presuppose readiness to accept the underlying concept as well. On the other hand, many of the suggestions were valuable simply as a guide-line to rational planning and economic construction.

The 1964 forecast of student numbers up to 1980 did not propose any policy, but simply took stock; as such (although the estimates have since proved too low), it is of great significance. It clearly stated that, in spite of sizeable expansion of facilities, quantitative measures alone would not save the university. It came at a time when the universities reluctantly began to set a maximum limit to study duration and found themselves forced, against their own principles, to bar qualified applicants in certain subjects from admission because they could not be accommodated.

At the same time, the actual development of the sciences increased the readiness to put into practice what, in principle, had already been accepted: the breaking down of barriers between the disciplines in the interest of scientific progress; economical use of large facilities; development of certain fields in certain universities, rather than the old idea of having every university stagged and equipped for every discipline. Also, the debate on reform ideas lost some of its dogmatic connotation

that had tended to turn the discussion on the feasibility of a certain matter into a question of "Weltanschauung". There remains, of course, and rightly so, the awareness that a great tradition as well as the future of national culture is at stake, and that education is not to be viewed solely as an economic process.

In 1965 and 1966, there followed the two sets of recommendations that concentrated most clearly on reform, covering staff and students, old universities and new. The first, concerning the structure of academic staff, supplemented and elaborated upon what had been suggested earlier; it also criticised the hesitancy in using the personnel increase of recent years to implement structural changes which, according to the WR ideas, was the main purpose.

The most radical changes of the German universities are proposed in the 1966 recommendations on a reform of study programmes. They seem to indicate a new stage of development within the Council's own thinking, probably brought about by the shock of the 1964 student numbers forecast, and by the disappointing 1966 experience that their previous recommendations on milder structural reforms had been only slowly and partially adopted and had not shown the desired effect. Though some of the more radical proposals now made by the WR had been made by other critics in the earlier 'sixties, it seems certain that they would not have found majority support within the Council before 1964. And even if the Council should have adopted them at that early stage, it would probably not have issued them because they would have been too radical at the time. Publication would only have jeopardised the Council's own position, while the only effect would have been a general shock and almost unanimous opposition from the quarters that mattered.

As it is, discussion has been intensive; criticism sometimes passionate; whole-hearted and unreserved support from university quarters rare but, equally rare, a complete refusal of the principle. The main point in the proposals is the division of the study programme into three stages. The first stage is to be, in most subjects, a four-year closely regulated and controlled study programme leading to professional qualification (or to early identification - by an interim examination after two years - of those that are not sufficiently qualified and to be sent down). The second stage, a kind of post-graduate programme with emphasis on research, is to be open only to specially qualified students and will lead to an advanced degree (doctorate). The third stage, the so-called "contact study programme", is still somewhat vague in concept and will be the most difficult to put into general practice; its aim is to provide graduate students or professionally active people with the opportunity of studying fields bordering upon their main discipline, or of keeping in contact with development in their own field through a kind of "refresher" programme.

Two years after their appearance, these proposals - though still far from being fully realised - are generally accepted university policy. In 1967 the WRK published a 500-page collection of published comment on them and took stock of all measures corresponding to the WR proposals which had been introduced by then. Full introduction of the measures proposed will be a long process. It is by now certain, however, that they will be introduced.

With the general re-structuring of higher education that began to take shape in 1968 policy and legislation projects (constitution of a comprehensive higher education sector), study reform policy is likely to be modified, though not changed with regard to the principles of the

WR recommendations. Thus, for instance, the new institutions to be moved up into the higher education sector are expected to divert "Abitur" holders from the university in addition to recruiting students from the other short-course branches of general secondary education via an interim stage of general-cum-vocational education and training. On the other hand, the students of these new institutions will, at certain stages of the three-year programme or upon graduation, be qualified to change over into the university proper. What the numerical result will be cannot yet be foreseen.

3. OTHER AGENCIES AND PLANS FOR REFORM

By terms of reference, composition and actual functioning the WR is, until now, the most important agency for planning and advice in science policy, university policy in particular. It is not however the only important body in that realm.

A decade before the WR was established, the universities of the Federal Republic jointly established the "Westdeutsche Rektorenkonferenz" (West German Rectors' Conference, WRK) whose members are the rectors of all universities (at present, 36). Reform issues have played a prominent part in the deliberations of this body, ranging from the abolition of course fees ("Kolleggeldreform") and the status of academic staff to the organisation of university research, the function of the "Abitur", the criteria for "numerus clausus" measures, curriculum and examination requirements and student co-responsibility in university self-administration. For many individual reform measures, the initiative has come from the WRK. It has, however, neither achieved systematic university reform nor developed a comprehensive concept for it, partly explained by the cumbersome method of procedure and by the fact that for many years there was a balance between conservative and mildly progressive representatives. Even if the situation had been more favourable in these respects, success would have remained doubtful, since the resolutions passed by WRK are not immediately binding on the individual universities. Finally, it must be remembered that any important reform and innovation can be achieved only through close co-operation between the autonomous universities and their respective Laender governments.

In the Laender with several universities, the rectors from the "Landesrektorenkonferenz" (Land Conference of University Rectors), in some Laender, have recently played an important role as partners of the Land Ministers of Education in the preparation of "university laws" and other matters in Laender policy.

Already in 1949, the Laender Ministers for Education and Cultural Affairs joined to form the "Staendige Konferenz der Kultusminister der Laender" (Permanent Conference of the Laender Ministers of Education and Cultural Affairs - KMK) as a body for consultation and co-ordination in educational and cultural policy. Among various committees, there is one on schools and another on universities, both comprising the respective heads of division in the 11 Laender Ministries. There are eight or ten plenary sessions and committee meetings each year, and a number of important reform measures in higher education have been initiated by the KMK. In accordance with the constitutionally guaranteed principle of autonomy of each Land, however, any decision of the KMK must be accepted unanimously. Furthermore, the educational policy pursued by one Land is of course strongly dependant on the political party coalition in power. The opposition party in one Land, for example,

may be in power in another and provide its Minister. This situation together with the rule of unanimity explains why the KMK is handicapped in settling controversial issues. Thus, it has so far made no serious effort to draft any kind of model university law to serve as a pattern for the individual Laender laws recently passed or being worked out.

WRK and KMK have set up a joint committee to study examinations and curriculum requirements. Assisted by sub-committees on the individual disciplines, the committee has worked out curriculum and examination requirements for an MA degree in two subjects, and framework regulations for a "Diplom" degree in 17 subjects; similar regulations for another 12 subjects are being prepared. These framework regulations are to serve as a model to the individual Laender. An essential aim is, in addition to national co-ordination, to increase efficiency by a more rational organisation of studies and thus to reduce the average study duration.

Quite recently, that is early 1968, WRK and KMK each issued a set of principles for comprehensive general university reform[1].

In July, 1965 Bund and Laender jointly set up the "Deutscher Bildungsrat" (German Education Council - BR). Though in many ways a complement to the WR, its structure is somewhat different. It also consists of two committees, an educational and a governmental one (Bildungskommission, Regierungskommission). Whereas the main tasks of the WR are carried out jointly by both committees, the main responsibility in the BR rests with the educational committee; only this committee is required to discuss plans, proposals and recommendations prior to presenting them to the Bund and Laender authorities. Its terms of reference are:

"- to make needed forecasts and development plans for the German educational system in accordance with the requirements of cultural, economic and social life and in due consideration of the future demand for qualified manpower;

- to make proposals on the structure of the educational system and to calculate the financial needs;

- to make recommendations on long-term planning for the different stages of the educational system."

Though the BR's main field of responsibility lies in primary and secondary rather than university education, the close relation and interdependence of these two spheres is obvious. Consequently, the agreement on the establishment of the BR expressly states that a joint co-ordinating committee of WR and BR members has to be set up. The presidents of both organisations recently declared that within two years they would present comprehensive, co-ordinated proposals on the reform of secondary education and the university. The BR is expected by this time to make recommendations for rather drastic changes concerning the "Abitur" and university entrance qualifications.

The basic idea seems to be that the last years of the Gymnasium should be changed from a "one-way road" (via "Abitur" to the university) into a "traffic roundabout" with numerous radial roads. The reason for giving this question special importance is the sharp increase in student numbers which is expected to continue as a result of the "explosion scolaire" in secondary schools.

1. For further details, cf. Chapter III.

It is interesting to observe the differences in emphasis in the proposals or attitudes of the various bodies. The WR' s primary concern is to safeguard the university' s function in research and highest quality professional training; it should therefore be allowed to restrict admission and to select the best according to its own criteria. The political authorities also realise and accept the need for saving the university from being crushed by the expected "student avalanche", but at the same time feel obliged to continue their policy of mobilising ability reserve, securing equality of chances, and making sure that everyone reaches the level of qualification that corresponds to his ability and interest. With the plans for a range of institutions open to every qualified student in Gymnasium or any other school at the end of the twelfth school year, it is hoped that the demand for higher education can be satisfied and, at the same time, the universities can be somewhat relieved. The system thus resembles the Dahrendorf Plan mentioned below in several aspects, but there are also significant differences:

- the shorter, 3-year academic courses are not to be offered at the universities, but only in the new institutions promoted into the higher education sector;
- qualification for admission to these new institutions is obtained a year earlier than the "Abitur";
- admission to these new institutions will be open to pupils from all branches of secondary education (for graduates of the "Hauptschule", school years 5-9, and the "Realschule", 5-10, there will be a new range of three-year and two-year institutions for that purpose, to be called "Fachoberschulen", special subject upper secondary schools, offering a vocational-cum-general programme in technical fields, social work and administration. The admission qualification thus obtained will then be limited to the three-year course in higher education in that particular field).

In general terms, this means a decisive step towards a horizontally structured educational system. It was initiated by an agreement of the Prime Ministers of the Laender on 30th October, 1968 at Hanover. The relationship with the Dahrendorf proposals also shows in the terminology: the new institutions to be promoted are in both cases called "Fachhochschulen" (special subject Institutes of Higher Education), and the enlarged higher education sector of which universities and those new institutions form only parts is called "Gesamthochschulbereich" (Global Higher Education Sector). The essential difference, however, is that in the new concept the latter sector does not accept students only from the small traditional supply system, mainly the Gymnasium, but from a broad layer of upper secondary education institutions that again are regularly accessible to the graduates of any branch of the general education system. The new concept thus goes further than Dahrendorf with regard to "equality of chances" and "horizontal structure" within secondary education. For that very reason, however, the new concept probably must maintain a differentiation within higher education that Dahrendorf meant to overcome: it will take a year longer and it will demand a greater breadth of preparation to enter the university proper directly from secondary education. It is an open question whether this obstacle will suffice to divert more students from the university than will be attracted to it again from the "Fachhochschulen". There seems to be some reason to predict that, in spite of all traditional principles, university admission will soon be based upon selection among the formally qualified candidates (directly from "Abitur" or through the "Fachhochschule") according to the particular kind and level of qualification and

university capacity. In a sense, this would also complete the "horizontal structure" within higher education: the unsuccessful holder of the "Abitur" will probably find his way into a "Fachhochshule", but this will mean he has lost one year and may be less well prepared for his particular field than those having come up through the more specialised "Fachoberschulen".

Several Laender Ministries of Education have, in the last few years, set up advisory councils on university policy and planning of their own. So far, only the council for Baden-Würtemberg under the chairmanship of Professor Ralph Dahrendorf, a Konstanz sociologist, has come up with a complete reform concept[1]. The "Dahrendorf Plan" appeared in the summer of 1967, just at the time of the first climax of student unrest and the realisation that universities might soon be suffocated by an increasing output of "Abiturienten". The Dahrendorf Plan is designed to satisfy the growing demand for university education and, at the same time, to meet changes in the social demand for qualified personnel. It does so by re-defining the concept of university education and a university. It adopts the WR concept of a basic studies programme for all and advanced research study only for the specially gifted minority, but proposes an additional special three-year short-course programme of study for most disciplines. Although certain facilities for transfer are foreseen, long-course and short-course programmes are to be separate from the beginning. The short-course programmes in some fields (e.g. engineering, social work) are to lead to qualification for professional careers that, at present, do not require a university education; in other fields (e.g. medicine, law) the Dahrendorf committee was convinced there was need for such a "medium layer" career in the respective professions. Consequently, the plan suggests that a number of institutes below university rank, notably the "Ingenieurakademien", be either promoted to university rank or attached to existing universities as "Fachhochschulen" (Special Subject Institutes of Higher Education).

The plan received nation-wide attention, and in view of its far-reaching implications, it was indeed of national rather than Land importance. Its advantage with regard to the problem of over-crowding and possible lack of employment for future university graduates in certain fields was obvious. By establishing new professional careers based on short-course studies and by raising the admission requirement to the "Abitur" for present careers of the "Ingenieurakademie" type, a large number of "Abiturienten" would be diverted from the classical university career, or "long-course study".

However, the critics feared that the effect would be cancelled out again, because those students who now go through short-course secondary school (Realschule, 10-16) and a period of practical training to qualify for the "Ingenieurakademien" would then change to the Gymnasium and try to take the "Abitur". Then instead of being able to select the best of "Realschule" graduates, the "Ingenieurakademien" would perhaps have to accept those "Abiturienten" that the universities proper refused.

Another point of criticism is the separation of long-course and short-course study programmes. There seems to be considerable risk that distinction between programmes based on the same formal qualification might in fact result in prestige problems, and that transfer would be too complicated to be practical.

1. "Hochschulgesamtplan für Baden-Würtemberg" in Bildung in neuer Sicht, Reihe A Nr. 8.

Finally, there seems to be considerable and understandable fear on the political side that the change in rank and entrance requirements for the institutions of the "Akademie" type will, in the long run, lead to the demand to be paid, staffed and equipped like the traditional universities. There are similar fears for the employment conditions of the graduates of these institutions. For the civil service and public as well as many other branches of employment, career chances and salary largely depend on the level reached in formal education. The "short-course" graduate would be placed a step or two below the "long-course" one, and the autonomous university might be pressured to agree that the three years were simply not enough.

All these arguments must be viewed in the context of the pyramid of qualified manpower in Germany and the corresponding training institutions. Since comparative surveys are often limited to university graduates, the special importance of the broad layer of institutes from the "Akademie" type to technician schools and advanced vocational schools in Germany is easily overlooked. There is a general tendency today to raise the "Ingenieurakademien" and some comparable institutes by adding one more year (seven instead of six plus one year of "guided practice") to the secondary education required for admission; it is widely felt, however, that taking the more radical step suggested by the Dahrendorf committee would bring only temporary relief and might lead to a serious disturbance in the professional structure[1].

Other reform proposals made by individuals about the time the Dahrendorf Plan became known have also met with considerable interest. The most important one came from Professor von Hentig (Goettingen University). Von Hentig suggests to put a general end to secondary education, whether at Gymnasium or Realschule, after seven years, i.e. two years before the present "Abitur". Depending on his interests and qualification, the student may then enter an institution of the "Akademie" type (where, under certain conditions, he can qualify for admission to the respective disciplines at the university) or to a new type of institution that is to replace, in function, the two last years of the Gymnasium and the first year of the university: the "College-Stufe", i.e. a kind of junior college[2].

In addition to Baden-Würtemberg, some other Laender (e.g. Nordrhein-Westfalen and Bayern) have also established councils to advise the Ministry on university policy and planning; the Nordrhein-Westfalen council plans to present its first set of recommendations on university expansion and study reform towards the end of 1968[3]. The recommendations for study reform will be based on the WR rather than the Dahrendorf proposals. They will also include surveys on the expected future need for qualified manpower in certain disciplines and on university capacity calculated on the assumption that the university programme is changed from the semester system to a study year and that the WR reform proposals are fully realised.

* 1. The new plan, based on the inter-Laender agreement of 30th October, 1968, may be viewed as a kind of compromise. General secondary education remains at six years, but is followed by two years of vocational-cum-general "Fachoberschulen". Within that period, the "guided practice" requirement is also met, but it will be shorter and more closely integrated into the training provided by the new "Fachoberschule".

* 2. Professor von Hentig is expected to go to Bielefeld University in 1969 and begin a pilot project of this type attached to the university.

* 3. The recommendations appeared in October, 1968. For more details, cf. Part III, E "Addendum".

Throughout the administrative and academic circles, there is a present tendency to work for rather drastic changes in the structure of university self-government roughly along the lines first put into practice at Konstanz, to come to terms with the Bund on the issue of joint financing, and to push for study reform according to the WR recommendations. There is also a growing realisation, however, that these measures alone will not suffice to take care of the student crowds that must be expected by the mid-seventies if the present system of pre-university education is not changed. Thus there prevails an atmosphere of tense expectation with regard to the joint comprehensive reform plans announced by BR and WR. The presidents of the two organisations have already declared that they would "not respect any taboos, not even that of the "Abitur".

4. THE DEVELOPMENT OF INNOVATIVE FEATURES

The main dates of formal development of the institutions have been given at the beginning of this chapter. For Bochum and Konstanz, they correspond to the almost routine sequence of steps from:

- the Land parliament decision on the foundation of a new university via;
- the setting up of a founding committee, consisting of a group of professors whose chairman sometimes may be designated as the first rector, and
- the discussion and approval of that committee's "structure plan" by the state authorities,
- the voting of the public funds and the establishment of a special office for construction by the Land administration, to
- the negotiations on first appointments, development of preliminary constitutions, study programmes and examination regulations, and
- the opening ceremonies.

In the case of Aachen, the development of the non-technological sectors was planned and implemented jointly by the responsible bodies of academic self-administration and the Land Ministry of Education. For Bochum and Konstanz, the structural and organisational details have been developed essentially by the members of the founding committees, i.e. by groups of university professors, some of whom would soon be working under the conditions themselves. They could not have done so without the support of the Laender administrations, but the initiative - once the basic decision of the Land to establish a new university had been made - lay with them.

At Aachen, the main bodies of the university were the Senate and the Faculty Assemblies and their special committees, i.e. the established organs for shaping university policy. For planning the structure of the medical faculty, however, a special committee of nationally known reform-minded professors of medicine from other universities was appointed. Their responsibility for one faculty was similar to that of the other founding committees for an entire new university.

In all three cases, the basic decision to found a new university or faculty as well as the principles of structure were strongly influenced by the 1960 and 1962 recommendations of the WR on expansion and structural reform of universities. As has already been mentioned, the 1960 volume dealt mainly with the quantitative expansion of capacity

necessary to accommodate present and expected student numbers. Though emphasis was placed on proposals to expand staff and facilities at existing universities, the WR was aware that possibilities were limited because of technical conditions and the structure of the traditional universities. It was certain, at any rate, that expansion of existing universities alone would not suffice. The possible solution of limiting admission to the university was unacceptable for reasons of educational policy principles, the campaign for democratisation of the educational system just beginning to show results in an increase in Gymnasium attendance leading to the "Abitur" and university entrance qualification, as well as the estimated future social needs for highly qualified personnel. The only alternative then was the foundation of new universities.

The WR therefore recommended the establishment of three new universities, one technical university, and several medical academies (corresponding to the medical faculty of a university). Little was said, however, about the extent to which these new institutions should follow the classical pattern or realise reform ideas. That reluctance probably was due, in part, to the relative balance of "Traditionalists" and "Reformers" in the general discussion on reform and partly the result of realistic and sober calculation of the WR: the need for immediate measures to increase capacity called for quick action, which might be delayed by long discussion of reform principles. Or, in the Council's own words[1]:

> "The function of the new universities can be derived only from the situation in the existing ones. It will, then, be that of providing additional places for study primarily in those disciplines which are already overcrowded, and secondly in those where the need for additional facilities is foreseeable. The main function of the new universities thus will be to ease the pressure of student numbers on the existing ones.
>
> We consider it necessary to found institutions of higher learning whose function corresponds largely to that of the existing ones. There arises the question of whether these new institutions might be used to overcome the traditional gap between 'university disciplines' and 'technical university disciplines'..."

This is a very careful and almost timid way of advancing a reform idea. The recommendations continue in a tone of self-questioning reluctance:

> "Considerations on the foundation of new universities ought to include new structures in the organisation of disciplines and in the university programme. Shortcomings to be witnessed in the present universities may thus be avoided. Based upon careful structural planning, reform measures suggested in the general discussion may be tried out. The foundation of new universities provides an opportunity for creating new forms of academic life, which may include new forms of life for the university community by the systematic, large-scale construction of student residences."

Only brief mention was made of what some features of a totally different new university might be:

> "The Council will examine whether it might be desirable to establish an institution of university rank with only a rather limited number of student places to concentrate on research and on the training of senior students."

1. Empfehlungen des Wissenschaftsrates zum Ausbau der wissenschaftlichen Einrichtugen. Teil I: Wissenschaftliche Hochschulen, 1960, pp. 53-55.

In view of the growing student numbers and the emphasis of the WR on quantitative expansion rather than structural reform, there seemed to be little chance for realising thoroughgoing reform concepts.

The basic ideas for the three institutions to be investigated here were formed about the same time and under the influence of the same facts and ideas that shaped the WR recommendations. As the WR itself came to put greater stress on organisational changes (limitation of subjects and development of "strong points"; inter-disciplinary contacts; abolition of the "separate institute for every established chair" principle and the hierarchical structure within the staff) and, in its 1962 recommendations, suggested their implementation at new universities, some of the ideas were used in the foundation plans.

i) The Ruhr University of Bochum

In May, 1960, shortly before the publication of the first WR recommendations, the Nordrhein-Westfalen Land parliament decided to found a new university to accommodate about 10,000 students. Though it was generally assumed that the university would not, in all its details, be a replica of the traditional ones, its main purpose was not to realise reform plans but to increase capacity. The location was left undecided and, for a little over a year, several cities and regions competed for the new university. When in July, 1961 the Land parliament decided in favour of Bochum, the main reasons given were:

- its location about halfway between Köln and Münster, where two of the three existing Land universities were located, would facilitate its function to relieve these two overcrowded institutions;
- located in the densely populated Ruhr district, it might attract "ability reserve" in that area, particularly from those social groups for whom the possibility of commuting between home and university might be a decisive factor;
- it would provide a heavily industrialised area with a much needed cultural centre;
- it would establish a better balance between the region of "Westfalen", which had only the University of Münster, and the "Nordrhein" region with Köln, Bonn, and Aachen[1].

Following the parliamentary decision, the Land Minister of Education appointed the "Founding Committee" (Grundungsausschuss), of seventeen renowned university scientists. The president had been Minister of Education in another Land for several years, and a number of the members were well-known advocates of university reform. Still, it seems worth noting, first, that within the very loose frame set by the political authorities, the structure of the new university was left almost entirely to university representatives and, secondly, that this principle was accepted by all parties without noticeable argument. Of course the Committee's task was assigned by the political authorities, and the proposals were to be worked out in contact with those authorities and acquire practical importance only upon formal approval by them.

Approval was given shortly after the Committee presented its "Structure Plan" in December, 1962. As the Minister of Education

1. In the meantime, a university is being developed at Dortmund and a new university planned at Bielefeld, both in "Westfalen"; in "Nordrhein", the Medical Academy at Düsseldorf has been developed into a full university.

pointed out in his speech at the opening ceremonies in June 1965, the basic concept had been "moderately reform-minded" rather than radically innovative because:

- there was as yet no generally accepted basic reform concept; and
- new foundations could not be planned in isolation, without due regard to the general university structure.

The Minister then put Bochum into the context of other new foundations when he said that it was important "to put the accents differently in the different new foundations, thus to try out several models and to collect experiences". The basic aim for Bochum was to establish a structure that would permit the university to function as "Universitas", i.e. to attain unity of the sciences and to practice that unity over a manifold variety of disciplines.

The principle of unity was confronted with two observations:

" - Disciplines and faculties of existing universities have increasingly separated from each other and we are now in a state of isolation which leads to the dissolution of the principle of the university and jeopardises co-operation in scientific research.
- Modern research calls for close co-operation between hitherto separate disciplines, and progress in science requires destruction of the barriers between different disciplines and faculties.
- Consequently, the task is to meet that threat of separation and isolation and, even more important, to create optimum conditions to satisfy the need and the desire for co-operation among the scientific disciplines, thus enabling scientific research to demonstrate convincingly its unity and inter-dependence to each student in academic teaching as well."

These are the considerations that led to:

- the inclusion of all the main academic disciplines, including engineering (theology was included, for instance, although there was no need for additional capacity);
- the organisation of the university into 18 smaller departments (instead of the traditional faculties);
- the establishment of institutes overlapping several departments;
- the provision for professors to be on the staff of more than one department;
- the plan to encourage special programmes and curricula for inter-departmental studies;
- the setting up of certain central facilities for common use;
- provisions to relieve academic staff as much as possible from routine administration.

Of special interest in the case of Bochum is the co-ordination between what might be called "spiritual" (i.e. the Founding Committee's) and "physical" preparation. About the same time as the Founding Committee was appointed, a special university construction office was set up by the public authorities. In co-ordination with the Founding Committee, it drew up the basic specifications for an international competition of architects (June - November, 1962). The first-prize

winner, out of 85 entries, worked together with the public building office as head of a development team of approximately 200 architects and enginners. In November 1963, parliament agreed to plans, as presented by the team, for the layout of the university and for the buildings of the first construction phase. A "field factory" for the production of prefabricated construction elements was built. Early in 1964, the first buildings were put together. According to the plans, construction work totalling about three million cubic metres of walled-in space was to be completed by 1970.

At the same time, first preparations for recruitment of staff were made. An interesting novelty has been the policy to recruit professors a considerable time in advance in order to have them participate from the beginning of construction. This presented problems since scholars could not be expected to interrupt their scientific work for a year or more. The Land therefore reached an agreement with the Ministries of Education of the Laender by which the appointed Bochum professors could continue in their present positions until the facilities at Bochum were ready.

Though this solution seemed satisfactory, it drew a good deal of criticism in 1967, when it became apparent that some institutes would not be fully functioning by the date originally foreseen. Some scientists still in their "waiting positions" complained that they were losing months in important research because of the late change in time-table; others who had already established themselves in improvised quarters at Bochum felt they were lacking the minimum space and facilities for their work. It seems that this policy, praised at the time as a model for future new foundations, has not been followed. According to a Konstanz representative, it is not followed there because of the Bochum experience. It must be pointed out, however, that the difficulties arose not from any essential feature of the policy but from technical mistakes, e.g. delay in schedule of construction, which it should be possible to avoid.

ii) The Technical University of Aachen

Like other technical universities, Aachen had for a long time certain chairs for disciplines outside the scope of technology, mathematics and sciences: economics, art history (within the architecture department), business engineering already in the first decade of the century; philosophy and lecturer positions for literature, history, journalism and music were established in the 'twenties and 'thirties. Business economics, political science, law, education, sociology, psychology, statistics and business mathematics followed in the 'fifties and 'sixties when Aachen established programmes for the training of vocational school teachers and business engineering.

By 1964, the technical university had eight chairs that are normally within the philosophical faculties of the classical universities, and five that would come under a faculty for economics and social sciences. In addition, two chairs for history, two for German language and literature, and one for English were included in the 1965 proposals made to the Land Ministry of Education.

The technical university had always felt the advantage of being able to offer its students of technological disciplines courses of general interest in the humanities and social sciences, and the programme in those fields had always catered to such interests. Thus it seems only a formal

seal upon the development that the Ministry approved the establishment of a separate faculty of philosophy (in this case, humanities and economics) in April, 1965; formal approval was, however, of great importance, since it carried with it the right to award the doctorate in these fields (Dr. phil. and Dr. rer. pol.).

The desire to obtain that possibility and privilege for the students and professors in these fields seems to have been the primary motive for applying for a separate faculty. Another motive was interest in making better use of available staff by attracting students preparing for the state examination (to qualify for secondary school teaching) in those subjects most over-crowded at the classical universities by just this group of students.

The next step - the addition of a medical faculty - followed quite a different course. It was initiated by WR proposals to increase facilities for the study of medicine by the creation of a number of separate medical academies, and by the utilisation, wherever possible, of municipal hospitals for teaching and training purposes. This led to an interest of the city of Aachen in establishing such an academy around its large municipal hospital, as a second institution of higher education within the city limits. Then the technical university appeared interested in taking *on the new disciplines, and as early as 1960 city and university pursued* this aim together. In July, 1961 the Senate of the technical university decided to apply for the establishment of a medical faculty. In December, 1963 the Minister authorised the university to form a "Preparatory Committee". One month later, the Committee, consisting of seven non-Aachen medical professors, five non-medical professors as representatives of the Aachen university senate, the university "Kanzler", and an Aachen professor as chairman, held its first meeting. In April, 1964 the Land Government formally decided to establish a medical faculty at the Technical University of Aachen.

While the Preparatory Committee worked out its structure plan, negotiations for transferring the Aachen municipal hospital to the Land and then assigning it to the supervision of the Technical University were completed. In February, 1966 the university Senate approved the structure plan and the preliminary regulations for the new faculty drafted by the Committee and decided to submit both to the Minister for approval. Approval was given in May, 1966. The Senate, thereupon, proclaimed plan and regulations to be binding. On 16th June, 1966, the medical faculty was formally constituted.

Again, an essential motive was the national need for greater capacity and the opportunity to utilise existing facilities more effectively, though this time the facilities originally were outside the university. Even more strongly than in the case of the philosophical faculty, a special advantage for both sides - medicine on the one hand, technology and the sciences on the other - and thus for science as a whole was the mutual contact and common work on inter-disciplinary problems. Special provisions were made to permit full exploitation of this advantage. Thus the Aachen experiment, the first case of affiliating a school of medicine with a technical university, is of general interest and significance.

The structure plan and regulations drawn up by the Preparatory Committee laid the foundation for a medical faculty that contains a number of innovations in the organisation, staff structure, and training programme that make it an interesting example of reform in an academic discipline which, in its traditional form, poses special policy problems.

iii) The University of Konstanz

As early as September 1959, the Prime Minister of Baden-Würtemberg (the present Federal Chancellor Kiesinger) mentioned the plan of founding a new university at Konstanz. Since of all Laender of the Federal Republic, Baden-Würtemberg was the one with the largest number of student places in relation to total population, and also with the largest programme for expanding the existing universities, it could be assumed that the new university would not only serve the purpose of creating more student places.

Kiesinger's personal interest in educational development and university policy may have been combined with interest in developing a region that felt neglected and, also, with the realisation that supporting higher education had become an asset for political prestige as well as a national necessity.

It was probable from the outset that the new university would not have only quantitative importance but would represent an experiment in university reform. Viewed in connection with the national situation, these considerations may be of general interest. It seems doubtful that a national authority, or another Land less well off than Baden-Würtemberg in universities and student places, would have been able to develop such a "luxury" project, from the point of view of student places. However, another Land, Nordrhein-Westfalen, has expanded its foundation plans in what could be called a crash programme (Bochum, Düsseldorf, Dortmund) and then crowned it by a similarly "luxurious" project at Bielefeld.

In February, 1961, only a few months after the publication of the first WR recommendations, the Baden-Würtemberg Land parliament requested the government to report on the possibility of developing the Academy of Economics at Mannheim into a university and of establishing another new Land university. The government memorandum, ready by October, 1962, was officially presented to parliament in April, 1963.

These dates are important because the WR recommendations on the structure of new universities of May, 1962, which went much further in suggesting qualitative reforms than the former ones on expansion, could be considered.

Thus the government memorandum stated at the outset that the foundation of a new university in the Land could not be governed by capacity considerations, since for that purpose large sums were already being invested in existing universities. The memorandum then continued:

> "It seems certain, however, that the existing universities, even when expanded as suggested by the WR or perhaps because of that expansion, will not be in a position to take determined steps towards institutional and structural reform of the university system. If, then, certain plans and proposals that have gained general approval in the discussion on university reform are to be tried out in practice - and that is indeed an urgent task - it can be done only at new institutions founded expressly for that purpose."

The memorandum then gives a detailed outline of the project: there are to be three faculties (philosophy and humanities; social sciences; natural sciences) with the student enrolment to be limited to 1,000 for each; whereas the philosophical faculty is to accept students from the first semester onward, the two other faculties will acept only those students who are at least in their fourth semester. The subjects to be

taught in each faculty are listed; even the number of staff from full professors to secretariat personnel are given. It is further suggested that the faculties should be divided into seminars and that some interdisciplinary institutes comprising parts of different faculties be established.

When the memorandum was discussed in the Land parliament, Prime Minister Kiesinger stated once more that concentrating on certain faculties and fields of research was an essential part of the project. The Minister of Education did what almost everyone who had taken part in university reform discussions had done: he maintained that the task and function of any German university, no matter how radically innovative, could be formulated only on the basis of the principles of Wilhelm von Humboldt, founder of Berlin University at the beginning of the nineteenth century and author of the traditional German university concept. (It is one of the remarkable features of the national discussion on university reform that practically every proposal is advanced with the argument that it presented the only way to re-install and uphold the Humboldt ideal in the modern world).

In February, 1964 the Land parliament formally decided on the foundation of a new university at Konstanz which was to serve as a model for university and study reform. A month later, the government appointed a Founding Committee of ten members and seven permanent guests. All members and four of the guests were full professors at some German university; the three remaining ones were the Secretary-General of the WR, the Mayor of Konstanz and a former Minister of Education of the Land. All were known to be strongly engaged in the discussion on reform, and most of them to belong to the "progressive side".

After 15 months, in June, 1965, the Committee presented its foundation plan to the Prime Minister. Government adopted it formally, and in June, 1966, the foundation stone was laid in Konstanz.

It seems obvious that such far-reaching reform measures could not have been developed, and certainly could not have found government approval so quickly without the general awareness of the need for reform having reached a new stage and, in particular, without the basis provided by the recommendations of the WR.

Part II

PROBLEM-ORIENTED ANALYSIS

A. HOW TO COPE WITH NUMBERS

As has already been explained, the pressure of student numbers had been and, according to all calculations, will continue to be to a greater degree, the most urgent problem in university policy. The alarming predictions of the WR in 1964 - nearly 380,000 university students by 1980 (not including foreigners) - have had to be adjusted in view of the unexpectedly sharp rise in the number of university entrance qualifications in the last years: the latest published survey of the Education Ministers' Conference (KMK) arrives at 498,000 (including foreigners); an unpublished survey based on the 1967 influx to secondary education predicts that the 500,000 mark will be surpassed in 1974/1975 if study duration cannot be reduced. If compared to the actual figure for 1952 (112,500) and 1964 (226,100), when the universities were already considered over-crowded, the magnitude of the problem becomes obvious.

There are mainly two reasons for this development. One is, ironically, the consequence of a highly successful policy to attract a greater share of pupils into secondary education, particularly into the Gymnasium, which leads to university qualification. The other is a policy failure, namely, the failure to counteract efficiently the trend towards a continuous increase in study duration. Only a small proportion of students take their examinations after the minimum study period (four years in most disciplines); the majority require another year or more. Only in the technological disciplines and in medicine, where a fixed curriculum and interim examinations are established practice, is this trend less noticeable.

The problem is often presented as a vicious circle: over-crowding causes less efficient working conditions and guidance, thus leading to longer study duration and consequently to more over-crowding. The logic is sound, but the actual situation is not quite so simple. If it were, study duration would have to appear statistically inter alia as a function of the staff-student ratio, which it does not. That ratio has, for instance, considerably improved since 1960, without the hoped-for effect of stopping the trend towards an increase in study duration, let alone reducing it.

In some fields, such as chemistry and mathematics, increase in study duration is often ascribed to the rapid development of knowledge in these disciplines which requires a longer time for the student to reach the front line, while at the same time the foundations received in secondary education prove less relevant for the academic pursuit.

In the humanities, where most of the typical "mass subjects" lie (with the majority of students studying two subjects in preparation for a "state examination", i.e. the Gymnasium teacher's qualification), the problem seems rather to be the absence of a clearly fixed curriculum and comprehensive interim examinations. The student takes certain

tests to be admitted to more advanced seminars or translation exercises, but he has no reliable way of judging his own standing at the time he signs up for the state examination; nor is it possible to estimate reliably the scope and level of what will be required in that examination, conducted by professors under the chairmanship of an Education Ministry representative.

Some of the above aspects will be given more detailed consideration. They have been outlined here only as background for a few points to be made in connection with the problem of numbers:

1. The pressure of numbers will be the main problem for university policy for at least another decade.
2. The problem of numbers cannot be solved by quantitative university expansion alone; structural reform is of, at least, equal importance (as a general insight, this has "sunk in" only recently).
3. It is politically (the citizen's right to the best possible education) and economically (future need of society for qualified personnel) out of the question to solve the problem of numbers by forcing a drastic reduction in the number of persons earning university entrance qualification ("Abitur" or equivalent).
4. Policy-makers are reluctantly beginning to face the question of how to avoid social unbalance and individual frustration if it turns out:
   - that university entrance qualification cannot be honoured because the field of the individual's choice is so overcrowded that a "numerus clausus" as an emergency measure has to be adopted;
   - that a university education may not, in all cases, be rewarded by the corresponding professional career and social standing because there is a surplus of highly qualified personnel in certain branches, but a shortage of middle-level manpower.

The last issue, which has only recently been realised as a latent problem in consequence of the rapid increase in university qualifications, is more serious in Germany than in some other countries. A completed university education is required for admittance to the "upper layer" civil service - including not only public administration and jurisdiction, but also teaching, post, railroad, public services, municipal administration, police, etc. - and also for a large proportion of the top "white collar" employee positions. The level reached in formal education is a decisive criterion in the salary scale position. Traditionally, anyone possessing such qualifications will expect a corresponding position in the professional hierarchy. It is likely in future that for certain professions such expectations will not always be fulfilled. This will require a more sophisticated argument for the value of higher education, and perhaps some legal changes to bring about greater flexibility in career qualifications.

Some people believe that the professions will adapt themselves to the larger offer of qualified personnel, and that society as a whole will benefit from it; others, including Dahrendorf and his associates, combine that argument with a proposal to prepare for the future structural changes in the social needs by gradually integrating certain institutes for qualified training (e.g. Colleges of Engineering) into the university level, and consequently raising the entrance qualification to the "Abitur"; these institutes would then absorb a considerable part of those who under the present system would surge into the universities in the present, more limited sense.

Another argument is that while society is obliged to offer each one the opportunity of an education according to his ability and interests, society is not obliged to guarantee him a privileged position in vocational or professional life afterwards solely on the basis of the formal qualification obtained. Society might, on the contrary, have a legitimate interest in a permanently competitive situation between the upper levels of professional life, including such stratified sectors as civil service and employees in the public services.

Finally, there is the argument that the "Abitur" - whose chief value today is that it opens the gate of the university and entitles the holder to study the subject of his choice (about 80% of all "Abiturienten" enter the university) - could also be made to open up certain careers without university study (today, this is numerically significant mainly for the profession of armed forces officer).

Any of these arguments may, of course, be combined, and each is sensible; the future will probably contain some elements of each: the proportion of university graduates in total active manpower will increase; some institutes of qualified training will develop a more scientific programme and gain university status; competition between people of equivalent formal qualifications may become more important; and it may be possible to offer future "Abiturienten" real alternatives to a university programme (though the latter two points would seem to require almost a revolution in the present pattern of social structure and psychology). If the universities should be compelled to refuse holders of the "Abitur", or if society could not absorb the graduates produced by a reformed and efficient university system under the conditions they are accustomed to expect, the disappointed ones may even resign themselves to the idea that advanced education has its value for the individual's personality independent of social gratification[1].

The obvious task, besides university reform, is a careful determination of the future social need for qualified manpower in as detailed a breakdown by professions as possible. This will serve as a basis for a more sophisticated policy for further expansion of facilities, and for dependable guidance and advice to students. The first studies of this type have appeared and shown a surprising degree of disparity between the individual professions. In some fields (e.g. teaching, metallurgy, mechanical engineering) the shortage will continue or even increase into the 'eighties; in others (sociology, economics) there is already a great surplus.

It is against this background that the significance of Aachen, Bochum and Konstanz with regard to the numbers problem must be discussed.

In the case of Bochum, the motive of accommodating the student increase has been most obvious. From the original 10-12,000, the maximum capacity estimate has been raised to about 18,000 (students 1967-68: about 6,000), and one has the impression that the planners begin reluctantly to accept the prospect of having to admit a few thousand more, once all buildings are complete. This development does not result from a corresponding enlargement in construction plans, but mainly from more rigid capacity calculations and some reallocations within the same amount of space and number of buildings. The estimated student capacity for each discipline was originally developed from the basic "academic infrastructure" concept (disciplines, institutes, chairs) according

[1] For more developments with regard to the foregoing general considerations on the numerical problem, cf. pages 57 and 58 ("Gesamthochschule" and "Fachhochschule").

to staff-student ratios recommended by the WR; these were, of course, from the beginning based on the policy decision that this new university should belong to the group of larger German universities (cf. München: 22,000; Köln: 18,000). For detailed architectural planning within the accepted constructional framework, certain student numbers were fixed as a basis for each department. For obvious reasons, such calculations are much less flexible in science, technology and medicine than in the humanities and the social sciences.

Considerations of the need to absorb increasing student numbers have not, however, led to the possible consequence of concentrating on those disciplines where overcrowding is most serious, nor does such a policy seem wise. The key idea of Bochum was that of "a practicable system of maintaining the unity of research and teaching" and the essential unity of academic endeavour in all fields. This, and not considerations of how to cope with numbers, was the guide-line for the internal structure of the university (department system; inter-disciplinary institutes) and the inclusion of such subjects as Protestant and Catholic theology where no real need for additional capacity existed.

In construction, however, the urgent need for new capacity was certainly a factor in the decision to use standardised, prefabricated elements which allowed for faster progress than conventional construction methods. Other measures (e.g. guidance, tutorials, new curricula, interim examinations) are also influenced by the numbers issue, but remain to be discussed under other headings.

At Aachen, the weight and function of the "numbers problem" factor is less obvious and perhaps more complicated to define. It has, of course, been widely used as an argument for the establishment of both philosophical and medical faculties and, in view of the general stress on Land finances, it may safely be assumed that without this argument the public funds would not have been forthcoming. In both cases, the new development could be based on existing facilities: a basic programme in humanities had existed for quite some time, and the existence of a large municipal hospital system initiated the idea of using it for medical training. Furthermore, in both cases, the capacity increase would be in a field which suffered most seriously from the numbers pressure (on the national scale, a large number of applicants for entrance into medical faculties have been turned down each semester for several years) and where, at the same time, a shortage of university-trained personnel (teachers and doctors) exists and will continue to exist.

But there is also a different numerical aspect which must be considered: the tremendous growth of the student population has, to some extent, by-passed the technological disciplines and consequently the technical universities. This is due partly to a decrease in the proportion (in some fields even the absolute numbers) of study beginners in those disciplines[1] and partly to the fact that the tendency towards extending study duration has been much less marked there than in other fields. Thus it was comparatively easier for Aachen - university and city - to adapt these new programmes and to absorb the additional students. It

1. It might be mentioned here that the numerical development does cause some concern, but not as much as might be expected. The reason is that the number of students at the "Ingenieurschulen" - changed into "Ingenieurwissenschaften" (College of Engineering) in late 1967 - has increased enough. These institutions have lower entrance qualifications than the technical universities and offer a 3-year programme leading to an "Ing. (grad.)" degree. The general impression is that it is the more practically minded engineer, the technicians, which industry will now urgently need in future.

may be recalled that the initiative for establishing a medical training centre at Aachen, in response to a general recommendation of the WR started with the city government.

At Konstanz, the small size of the intended student population (3,000) suggests that it cannot have much significance for the numbers problem. This is basically true, but must be qualified by two considerations:

- Konstanz will be limited in disciplines to what would be three traditional faculties only. Within this limited scope an additional capacity of about 1,000 in each faculty will not be completely negligible;
- Konstanz is definitely the most "innovation-minded" university at present. The work that is beginning there in the field of testing new curricula and training methods to increase efficiency of the academic education system may well prove, in the long run, of greater importance on the national scene than if Konstanz had been designed to accommodate a much larger number of students. This is part of the underlying concept that, through limited scope and size, a university has better opportunities for trying out new structures of academic organisation and new forms of academic teaching for the ultimate benefit of the whole national system.

Since the problem of numbers is considered the main issue at present, brief mention should be made of what other activities are being carried out nationally with regard to it. In addition to the structural changes mentioned above (WR recommendations to establish a four-year limit for the majority of students, with advanced studies to follow only for the top level; Dahrendorf Plan of differentiating from the very beginning between a three-year course for about half the students, including programmes which are at present below university level, and a longer one of four to six years), there are a number of new universities in the planning or initial operation stages. They cover roughly the span of possibilities represented by Aachen, Bochum, and Konstanz: addition of new faculties or departments to existing institutes for university-level training in certain fields (e.g. the development of the medical academy of Düsseldorf into a university; the change from "technical university" to "university" while still in the planning stage, at Dortmund); foundation of larger new universities covering the traditional range of subjects (Bremen); foundation of new universities limited to a smaller number of disciplines, with a particularly strong bias for reform and innovation (Regensburg, Bielefeld).

There is one other aspect of the number problem, the question of how to cope with the presently enrolled students there, at both university level and department level. This is an issue that all universities face, the older ones much more acutely than the new, since the latter, during the period of construction, accept only limited numbers.

In principle, the new universities are prepared to, and to some extent do, practice the means employed by the overcrowded traditional universities: more guidance and tutoring with the help of advanced students and assistants, better co-ordination of courses to achieve maximum utilisation of facilities, concentration on examinations in the human-hours periods and intensive participation of "Mittelbau" staff in academic teaching. The most important single measure is probably the setting up of close and realistic study plans for each discipline.

B. EQUALITY OF OPPORTUNITY

In the Federal Republic of Germany, about 50% of the population are members of the working and farming classes. About 6% of university students come from this social group. The proportion has hardly changed within the last 15 years, i.e. the absolute number has increased only in proportion to the total number of students. Even the introduction of a national stipend scheme for all students from families whose income lies below a certain per capita level - the so-called "Honnef Model" scheme which, at present, supports about 20% of all students - has not had a significant effect in that regard. It is easy to see why this situation has played an important part in the national debate on educational policy in a democratic society.

As long as the traditional system of gaining admittance to the university remains basically unchanged, there is little that can be done by the university itself, beyond financial support, to ensure that the "equality of opportunity" principle is translated into practice more efficiently. Strictly speaking, the university does not admit its students at all in the sense of establishing the criteria; the state, through its schools and according to the regulations of the Education Ministry, issues university qualifications which must be honoured by all universities and faculties. In about 95% of all cases, that qualification is the "Abitur" certificate, obtained at the end of the Gymnasium (normal type, from age 10-19; some special types 12 or 14-19). On the other hand, about 80% of Gymnasium "Abiturienten" go on to a university, most of the remainder to a teacher training academy.

Policy measures to improve the opportunities of gifted children from lower social classes have followed two lines:

- attracting them into the Gymnasium and helping them to succeed there;
- offering other routes of access to the university.

Of these, the latter was emphasised first and has received great publicity. It is important as a principle, but does not have great numerical significance. Its main features are evening classes or full-time schools (often boarding-schools) for persons who have already completed a vocational training and have shown special ability and promise.

The more "progressive" ones among the initiators of these programmes seem to feel somewhat disappointed today, since in their opinion the idea of establishing vocational experience and qualification as a true alternative to the traditional "general education" ideal of the "Abitur" has been diluted. Though the programmes of these special institutes account, to some extent, for the practical background and the advanced age (mostly over 20) of their pupils, they differ rather in degree and scope than in principle from that of the Gymnasium.

The case is different in the route leading from elementary or short-course secondary school (10-16) via practical training and/or vocational school to a full-time advanced vocational school or "Ingenieurakademie" (College of Engineering). Good marks in the final examinations there may qualify the student for admittance to university study in that particular discipline. Again, however, it is not numerically significant; in most cases, it will concern good graduates from an "Ingenieurakademie", but the majority of them will accept a post in industry rather than begin a university programme of study.

Some of the measures taken in the Gymnasium, notably that of abolishing fees (which used to be DM 15-20 per month), date back to the 'fifties, but the main ones have been taken in this decade. The most decisive single measure has probably been to replace the entrance examinations for Gymnasium and Realschule (short-course secondary, 10-16) for the ten-year-old by the vote of their elementary school teachers and a two-year "observation stage". If the elementary school considers a child "suited" or "perhaps suited", the secondary school will accept him for the observation stage. Not until the end of the second year will the decision be made whether he is definitely accepted or refused. Some Laender have postponed transition into the school leading to university qualification for two years (age 12).

Curricula of the different types of schools after transition age have been adjusted to facilitate later transition. The amount of classical languages to be learned at the Gymnasium (a frequent cause for eventual failure of working-class children) has been reduced; some types may award the "Abitur" with only English and French as foreign languages. Other features and programmes such as supplementary courses, full-day schools and comprehensive schools to facilitate recruitment of gifted children from the labouring classes for the university are in the experimental stage.

At the same time, the general development of the economy, activities of public information media[1] and a conscious policy to mobilise ability reserves have, in the past few years, had considerable success in breaking down psychological barriers against secondary and higher education in the minds of working class parents.

Of special importance to the universities here under review are the far-reaching reform plans of Baden-Württemberg and Nordrhein-Westfalen to develop the second cycle of the elementary school (10-15) into a true secondary school followed by a system of vocational-cum-general education schools which may, for gifted children, lead to an institution of the academy type and university admission.

It is the institutions of the "Ingenieurakademie" type that must be taken into account when discussing the opportunities of gifted children from workers' and farmers' families in Germany. The typical "social climb" is, as in the past, via Realschule (short-course secondary, 10-16, emphasis on modern languages and science-technology) or a Gymnasium career broken off after six years and a short period of study and practical work to be admitted into an "Ingenieurakademie" or

1. Including free publication in mass newspapers of a series of announcements of the "Aktion Gemeinsinn" (Action Group Community Service), a non-profit organisation which tries to call attention to general social needs, e.g. the problems of old people, etc.,) with the slogan "Send your children to better schools for a longer time".

similar institutes for design, social, clerical or business work. The upper level of this group of institutions have recently or soon will receive "Akademie" status[1].

The decision to grant them special status as academies is partly motivated by the desire to increase the prestige of these institutions so they might absorb some of the pupils that would otherwise press on for the "Abitur" and into the universities, while at the same time keeping the present structure of vocations and professions from skilled workman and technician to "Ing. (grad.)" (of Ingenieurakademie) and "Dipl. ing." (of a technical university).

Whatever the eventual effect of these general tendencies and programmes, the unchanged low proportion of children from workers' families at the universities is most disconcerting. Even among sociologists and specialists on student statistics, one meets with the conviction that this "simply cannot be true in comparison with other countries". The explanations range from different criteria in national statistics (many people doing manual work in Germany - school janitors, bus drivers - are classified as employees or municipal civil servants) to the social psychology phenomenon that parents or students tend to cheat on the respective question.

Under the present conditions for university admission and study the only way in which individual new universities can contribute towards greater "equality of opportunity" seems to be through their geographic location. Some relevant information may be gathered from the latest statistics for the Nordrhein-Westfalen universities. Of the total 1967 new entrants, 8.85% were from working-class families. The scale ranges from the Düsseldorf Medical Academy (4.35%), via Aachen (7.98%) to Bochum (12.9%). This seems to indicate that technology and engineering (Aachen) may be slightly more attractive to that group than other university disciplines, but that geographic location probably is of even greater importance (Bochum). From personal experience, members of the Bochum staff confirmed the impression that many of the working-class students probably would not have gone to a university at all (some of them, to an "Ingenieurakademie" or a teacher training college for elementary school teachers instead) if it had not been within commuting distance.

The general impression that with increasing democratisation of the univerasity the geographic location becomes increasingly important has been confirmed by a recent study on the "university map" issue[2]. The main finding is that children of lower income groups tend to go to the

[illegible]

nearest university, or not to go at all if none is near. The location is still of minor importance, but in comparison to the traditional situation in Germany where student migration was the accepted rule, the results of the study indicate a change. As a consequence, the authors conclude that for the purpose of attracting "ability reserve" through strategic location of new universities, the ones at Bochum and Bielefeld are perfectly placed, whereas Konstanz is not. They would have favoured the original rival of Konstanz for a new university, the city of Ulm[1].

1. In the meantime a new university, with science and medical faculties only, has been opened at Ulm.

C. CONTENT AND STRUCTURE OF STUDIES: INTER-DISCIPLINARY APPROACH

Questions relating to content and structure of studies have for several years now held first place in the public interest as well as among those concerned with university policy. The 1966 WR recommendations on the reform of university studies as well as other projects witnessed that interest and, at the same time, intensified it. Though it has, in the public information media, been pushed into second place by the more spectacular instances of student agitation for a greater voice in the administration and general policy-making of the university, politicians and administrators concerned with educational problems as well as academic authorities continue to stress the importance of study reform. Actually, they point to the partial failure in study reform as one of the main reasons for the increasing impatience and violence of student agitation.

The problem is, of course, basically one that presents itself at all universities, due to the constant need of adapting the academic programme to the continuous development in science and society. It has already been indicated why this argument might at present be stronger and more valid in Germany than in some other countries: the isolation of science in Germany since the 'thirties, and the conservative elements in university reconstruction of the 'fifties; the traditional tendency in university ideology to consider the "social service function" (training qualified manpower for useful professional service) as an accidental rather than essential function, especially in the humanities.

Furthermore, the issue of study reform in Germany is closely related to the most threatening problem of the next decade, that of overcrowding. As already pointed out, part of it is due to a continuing extension of the average period of study. Though various recent surveys on drop-outs have yielded different results, it is safe to say that the drop-out ratio has increased with study duration, and that these two increases are particularly marked in fields where there is no clearly defined study programme or step-by-step control. In the humanities, for instance, the estimated drop-out rate is above 30%. Study reform thus becomes not only a question of continuous adaptation to modern needs, but one of organisational efficiency in general; it may well become one of sheer survival for the German system of higher education as it presently exists.

In order to understand the various measures taken, it is necessary to recall that university qualification is given by the final certificate of the Gymnasium, the "Abitur". Independent of student marks in the various subjects, and independent of the emphasis the Gymnasium placed on classical languages, modern languages, or mathematics and sciences, the "Abitur", in principle, implies the right to be admitted to any field of study at any university. Where admission restrictions

had to be applied lately (e. g. medicine, pharmacy), it was done with full acknowledgement of violating a maintained principle.

Upon entering the university, the student will enrol in a certain faculty (e. g. medicine, law, philosophy); in some faculties he will also indicate the subjects he wants to study (e. g. in philosophy: history and English; in science: chemistry and mathematics) and the type of final examination toward which he is working (usually state examination or diploma; in some cases, doctorate as only degree). He will also be informed of the basic requirements in subject combinations for the final qualification (e. g. for a state examination to qualify for Gymnasium teaching in the philosophy or the science faculty, he must take two Gymnasium subjects plus a modest programme in pedagogy and philosophy or psychology; for a diploma, he must have a major subject and some courses in related subjects, such as: for physics, mathematics and chemistry).

Theoretically, the student might then study the examination regulations to deduce a logical step-by-step course to reach the final level required. To be admitted to the state examination in English, for instance, the regulations may require: certificates of successful completion of advanced exercises in Old English, Middle English, translation: successful participation in at least two advanced seminars on English literature (the corresponding certificate usually given upon presentation of a paper or some other special contribution); a number of lectures on English culture and literature (for which registration serves as evidence). Upon inquiry, he may discover he will not be admitted to an advanced exercise or seminar without successful completion of a prerequisite course, and this will require a beginners course.

In other fields, a reasonable programme might be developed by a similar process of deduction. The student will have assistance from various voluntary groups (students) or official agents (assistants; senior students, appointed as tutors). Yet the programme thus decided upon seldom works out. Some of the reasons are objective ones:

- Some students may find their academic background (language proficiency; science) too weak to complete the introductory courses on first attempt.
- The main courses in some fields are not always read at regular intervals.
- A seminar may be so overcrowded that the student is given no opportunity to write one of the special papers, or to qualify in another way for a certificate of successful participation; in courses requiring laboratory space, he may not be admitted because of the long waiting list.
- The state examination requirements are based on what the student should know to be a teacher, or a judge, both of the method of scientific work in his field and in the subject matter; the university programme is, in principle, based on introducing the student to the methods and problems of research; the student is thus likely to spend much time and energy on a small detail of exemplary research interest, only to find shortly before the examination that he has yet to go through a great deal of general background reading. This has led to a particularly curious situation in law where minimum study duration is only seven semesters, compared to eight in most other fields. From the fourth or fifth onward, however,

many students spend most of their time not at the university, but with a private "Repetitor", of which there are several in each university town. The repetitor is a trained and experienced lawyer who drills his pupils for the state examination in a highly efficient and very unacademic manner, to the point of selling hints of topics set at the last ten years' examination tests and of the professional "hobbies" of each potential examiner. The courses of a well-known repetitor are probably more overcrowded by fee-paying students than any university course.

Other reasons might be called subjective:

- The students, particularly in the philosophical faculty, often do not have a clearly defined aim at the beginning. They may indicate the state examination, but secretly hope for a doctorate; or they may have the courage to indicate the doctorate, but plan to take the state examination along the way to have something to fall back on. The most reasonable programmes for these two overlap, but are not identical.
- With the increase in senior staff (e.g. establishment of "parallel chairs") over the last seven years, the student feels compelled to prepare himself for the possibility of being examined by a larger number of professors with a wider range of special interests than before; thus a measure intended to improve the teacher-student ratio in order to reduce study duration may actually have the reverse effect.
- Perhaps the most important factor is that the student does not have a definite date at which he must be prepared to take the final examination, or, at least, to explain his delay; in view of the potentially unlimited store of knowledge that can be learned and might be asked in the examination, there is great temptation to postpone the decision again and again to "next semester".
- The advanced student accepted by a professor as a candidate for a doctorate will often try to get an assistantship while working on his thesis; this gives him financial and a kind of psychological security, but may not leave much work time for his thesis.

Over the past decade, a set of measures has been advocated, tried out and in some cases generally introduced:

- Introductory courses and tutorials have been developed; participation has in some cases been made compulsory for first-year students.
- Examination requirements have been revised and corresponding study programmes have been worked out.
- The "Mittelbau" of academic staff (just below full professor) and the number of assistants have been greatly increased.
- The "Magister" degree has been developed in the humanities (as an equivalent to the "diploma" in science, technology, sociology and economics) for those who did not either take the state examination or continue for a doctorate; previously, they might have done very well for four or five years, but would leave the university, technically speaking, as a "drop-out".
- Interim examinations have been or will be generally introduced in all fields that are numerically important (in medicine, science and technology they are long established practice).

- Attempts have been made, though somewhat half-heartedly, to establish a liberal maximum of semesters for which a student might be registered without taking an examination. This led to some widely published cases, e.g. the one of "turning out" a 20-semester student operating a prosperous used-car business and re-registering each term in order to benefit from cheap student health insurance, but otherwise it was rather of demonstration value.
- Special programmes of shorter duration, rather strictly regulated, have been developed for Realschule (short-course secondary school, age 10-16) teachers. Requirements are lower than for Gymnasium teachers; the majority actually complete their studies within the minimum period of six semesters. In the Land Baden-Würtemberg there is a similar programme to qualify for Gymnasium teaching, excluding the last three grades. Both programmes have proved surprisingly attractive and now threaten to make the shortage of Gymnasium teachers even more severe. In spite of considerable resistance from Gymnasium quarters, it seems unavoidable that teachers with Realschule qualification will soon be admitted on a larger scale to the Gymnasium.

The debate on the need for study reform, and the measures thus far taken, have been motivated mainly by an interest in greater efficiency (reducing study duration and drop-out) and in relating the study contents more closely to the professional needs of the majority of the students (in the humanities: more exercises in language and literature, less historical grammar; in technology: more advanced practical courses in special fields such as electrical engineering and fewer broad general background studies; in science: earlier specialisation, perhaps in an inter-disciplinary field, but fewer general background studies in neighbouring subjects; a more systematically organised programme for future teachers).

Relatively little seems to have been done in study reform for the purpose of keeping up with modern scientific development. But that impression may lend itself to misinterpretation. The vagueness of explicit or deduced study programmes, and even of the examination requirements themselves, together with the large scope of freedom for the professor to choose for lectures or seminars what he likes, allow for speedy adaptation of study contents within a certain field to the latest development. The examination regulations for the biologist may include one advanced laboratory course in organic chemistry, but the content of that course, even if taught by the same professor, may differ greatly from one semester to another.

If it is a matter of instituting changes that affect the regulations and the traditional delimitations of the subjects, reform or even adaptation to modern development meets with much greater difficulty, since the state administration and the university must reach agreement. Even where such agreement exists in principle, it takes much time to achieve practical results.

To illustrate, we take one of the main proposals of the WR recommendations on study reform: the general introduction of interim examinations. After discussion, it was generally approved by the various regional and professional academic bodies; professorial committees set to work to draft the appropriate regulations, and after a period of discussion and alteration, the regulations for each subject were presented to the Land Ministry of Education for approval. In some subjects, e.g.

the sciences, all universities - or at least all universities of one Land - agreed on one identical text. In the philosophy faculty, however, such agreement could not be reached, and thus the Land Ministry of Nordrhein-Westfalen found itself confronted with the question either of withholding approval - which meant the risk of being accused of delaying university reform - or of giving approval at the risk of cementing disparities among the universities. (Since the interim examinations are "academic" and not "state", the Land could not take the initiative). What actually happened was that the individual regulations were "tentatively approved", including the ones for Bochum.

1. BOCHUM

In the general pattern of curricula, examinations and degrees Bochum University corresponds to the traditional universities. In fact, most of the examination regulations now in force have been adopted from Aachen (for the technological disciplines) or from the University of Münster. They will be replaced by new ones as soon as the Bochum Committees working on them have completed their task. It is unlikely they will deviate greatly from the established pattern, but there will probably be some changes which reflect two special features of Bochum, e.g. emphasis on industrial society aspects in law, economics and social sciences because of its location in the Ruhr area and a strong element of science, law, economics and sociology in engineering because of the inclusion of technology in the university.

These indications may be gathered from the foundation recommendations. They contain the following comment on the Law Department:

> "The structure plan for the Law Department is based on the concept that the studies will lead to the traditional first state examination in law. A question that should be considered is, however, the creation of special diplomas for additional work in such special fields as business law, social law and legal aspects of city and regional planning. Business law is to be one of the fields of emphasis at Bochum University; this will call for close co-operation between the disciplines of law and economics and should be provided for in the structure by including a professor of economics in the respective institutes of the law department.
>
> It does not seem feasible to attempt a full survey of all fields of economics within the regular study programme of law students. This would be possible only if the period of study were extended, which is undesirable. It is recommended, therefore, to concentrate on those fields of business administration which are closely related to legal questions (e.g. trade and corporations, insolvency, stock exchange) with emphasis on the economic policy aspects and the pertinent parts of economic theory. Such emphasis would also contribute to the training of future industrial managers and to the additional training of professionally active personnel."[1]

The 1965 preliminary study regulations account for these general suggestions by listing a series of optional courses from the above fields, in addition to the basic study programme of seven semesters, but the programme itself does not deviate from the usual pattern.

1. [illegible] Ruhr-Universität Bochum, Bochum, December 1965, page 5.

A somewhat more radical line has been followed in economics ("Wirtschaftswissenschaften"). According to the foundation recommendations, "the structure of the Department of Economics must take into account that its assignment in teaching and research includes a broader training in economics for students of law and engineering. It is not intended to establish a training programme for business administrators ("Betriebswirte") because the capacity of the other Land universities... in that field is sufficient[1].

The general idea is specified in the preliminary study regulations:

"One of the constant topics in the present discussion is the unsatisfactory situation in the economic sciences faculties at the German universities; this situation is frequently quoted as argument for the urgent need of university reform. The department for economic sciences of the Ruhr University has carefully considered the arguments and decided to introduce the following innovations:

- the study programme combines the traditional programmes for economics and for business sciences into one programme with one degree;
- the study programme is divided into a "basic study course" of four semesters, completed by an interim examination, and a "main study course" of four semesters, completed by the diploma examination. Upon successful examination the graduate will receive the academic title "Diplom-Ökonom" (Dipl. rer. oec.);
- the study programme is organised in such a way that it can normally be completed in eight semesters, at the most in ten;
- a special pre-doctorate study programme ("Doktoranden-Studium"), similar to the Anglo-American post-graduate study, is prerequisite for the doctorate[2]."

The combination of the two traditionally separate study programmes is justified from the point of view both of scientific development in the field and practical professional needs. The interim examination is to cover economics, business, law (basic knowledge of public law, economic aspects of civil law) and statistics; for admission, a certificate of successful participation in mathematical economics and accounting must be presented. The final examination covers four compulsory subjects (economic theory, economic policy, theory of business economics, applied business economics) and one optional subject (to be chosen from finance and taxation, public law, political science, sociology, statistics, history of economics, civil law).

This innovation in the study programme may be of national rather than general interest, since the status and programme of business science ("Betriebswirtschaftslehre") as a separate academic discipline has, for some time, been a matter of debate, though its general importance as an argument for university reform should not be over-emphasised. The details may, however, serve to introduce and illustrate some general observations on the organisation of study programmes at Bochum which, again, may be taken as an example of the present stage of study reform development at most German universities.

1. Ibid., page 7.
2. Ruhr-Universität Bochum, Vorläufige Studienordnungen, 1966, page 75.

Development is, in principle, guided by the WR recommendations on the organisation of studies, outlined in the general section of this paper together with the organisational and psychological obstacles to their introduction. So far, relatively detailed programmes for the first part of the course and the interim examination at its close have been worked out at most universities. The terminology used - basic studies ("Grundstadium") for the first course, main studies ("Hauptstudium") for the final four-six semesters - is somewhat confusing, since the WR called the whole programme leading to the first degree "basic studies", and suggested that only the specially qualified students (estimated to be 10-20% of the total) be admitted to the advanced studies programme ("Aufbaustudium"), a kind of post-graduate work. An indication of this is found in the regulation just quoted where it states that a special advanced studies programme is required for the doctorate in economics.

Generally, however, at Bochum as elsewhere the WR recommendations are, so far being, put into practice only with regard to the setting up of a detailed study programme, especially for the first semesters, and the introduction interim examinations. At Bochum, a student who fails the examination twice will not be admitted again. There are no legal possibilities so far, however, to prevent him from remaining a student in that discipline or changing to another field at the same or another university. In a similar way, the limitations on total study duration are somewhat vague; some of the study programmes cover nine semesters where the official maximum study duration is eight.

Judging from the present plans, more interesting innovations in study programmes may be expected once the engineering disciplines have been established. According to the foundation recommendations:

> "... the selection of engineering disciplines to be established at Bochum was determined by the consideration that they should offer particularly promising possibilities for close contacts and co-operation with the traditional university disciplines; at the same time, care was taken that the Bochum engineer should not resemble too closely the technical physicist trained by the technical universities.
>
> Construction training must receive special emphasis in the engineering studies... Every student of engineering is to receive thorough training in at least one subject of construction. Consequently, there is a wide range of construction subjects in the programme of the engineering departments...[1]."

The founders further recommend that the engineering study programme place greater emphasis than the technical universities on theoretical subjects, i.e. sciences and mathematics. These subjects are to be part of the entire programme, not only until the iterim examination. The present general trend in the training of engineers reflects these suggestions and recommendations of the WR.

2. AACHEN

At Aachen one must speak of plans rather than experience. The plans are interesting, especially the new study and degree programme

1. Empfehlungen, page 40.

that combines medicine and engineering into medical engineering. It is so far only a general intention, but the importance of the programme for work in the health service and in research is obvious. Some promising projects of common research and testing work of engineers and medical scientists at Aachen have led to plans for a medical engineering inter-disciplinary research institute[1].

Another plan, that of framework regulations for obtaining a doctorate which will include a number of interesting combinations of humanities and engineering has not yet been fully worked out. Somewhat less definite, but considered with interest and optimism, is the idea of establishing new degrees for this type of inter-disciplinary study.

Though these are, at present, only plans, just as those for engineering at Bochum, one should not be surprised if after a few years the old technical university of Aachen turned out to be more innovative in inter-disciplinary study programmes and perhaps even inter-disciplinary research than the new university of Bochum. Perhaps an important reason for this is the fact that policy and general atmosphere at Aachen are determined by technologists, i.e. a group of university professors who are in constant contact with industry and are more pragmatic in their approach to questions of organisation and reform than the representatives of the traditional university disciplines. In the opinion of one non-technologist of Aachen, "the common sense of the technologists is catching even for the philosophy people".

3. KONSTANZ

The most radical changes with regard to study programme and degrees are the ones in the experimentation or planning stages at Konstanz. They range from new curricula in traditional disciplines to new types of academic work, new examinations and degrees. These measures are, however, in many aspects so closely bound to the general structure of the university, with its emphasis on research training and a new organisation of research work, that it would be very difficult to isolate the study programme part for the sake of including it under this heading. Therefore, it will be dealt with in its general context under G and H.

1. For certain reforms planned within the study of medicine, cf. under G.

D. SPECIALISATION IN INSTITUTIONS OF HIGHER LEARNING

Of the three universities being surveyed, only Konstanz requires consideration under this heading. The limitation of the university to three disciplines and 3,000 students was mainly a result of the general reform concept; a large university with the full range of traditional disciplines was considered a much less suitable testing ground for such a far-reaching concept. It also was a rejection of the traditional aim of a university to offer a full programme of research and study in all disciplines. Choice of subjects was determined by what were considered the most urgent needs for training capacity and research and, at the same time, what would offer the greatest opportunity for integration and reform. In developing biology into a "strong point" of advanced study and research, Konstanz is carrying out the WR proposal for specialisation.

Upon closer look, Bochum - in spite of its wide range of subjects - appears to be influenced by similar considerations. Most of the traditional faculties (except agriculture) are represented in the 18 departments, but the founders strongly emphasised the need to concentrate on certain aspects in each (cf. the comments concerning engineering and law in section E). The establishment of an inter-disciplinary centre of excellence in the Institute for Asian Studies is an example of the founders' intention, though it has less impact within the university as a whole than the "strong point discipline" of biology at Konstanz.

It seems to us that these two examples, Asian Studies at Bochum and biology at Konstanz, are more indicative of the present specialisation policy on the German university scene than the new universities with a limited number of disciplines. The latter seem often more determined by such factors as need for training capacity or availability of funds, space, and personnel. The pattern of "centres of excellence" ("Sonderforschungsbereiche"), however, after a long period of transition from principle to actual practice, is increasing in importance on the university research scene. Its organisation has been encouraged and worked out by the WR and the DFG will play an important part in its implementation. At the same time, it will continue its "growing point programme" ("Schwerpunktprogramm") through strategic allocation of research funds for special disciplines[1].

*1. The "Sonderforschungsbereiche" are to be financed jointly by Bund and Laender. The WR has, in the summer and autumn of 1968, reviewed the applications from the universities and compiled a list of about 150 special fields of university research that it considered to merit such special support. In co-operation with the DFG and the political authorities, this number was then again considerably reduced in view of the limited funds available for 1969. Essential criteria seem to have been: "co-operative nature (i.e. inter-disciplinary and/or inter-university) of the project, and proof of special potential and strength of the institute or research team applying for inclusion in the programme".

In addition to the long-range policy of the science organisations, with strong support of Bund and Laender to develop a co-ordinated pattern of specific strong fields of research over the university map, the Federal Government through the Ministry for Scientific Research is promoting research in certain fields of national interest (e. g. oceanography and computer technology).

The success of the policy is important for the status and quality of university research, and it is likely that the changes in the structure of university research proposed by the reformers (abolition of the one-institute-per-chair principle and the hierarchical structure, and instead, larger institutes with a team of scientists) will be enforced. It seems to be the only way to prevent the most important research disciplines and the most talented scientists from emigrating from the university to Max-Planck-Institutes, public research institutes, or the United States.

E. ORGANISATIONAL STRUCTURES, INSTITUTIONAL AUTONOMY, ADMINISTRATION AND MANAGEMENT

The German universities are state institutions with the privilege of self-administration. The university constitutions are drafted by the university and become valid upon approval by the state (Land). In some Laender a special "University Law" has recently been passed (Hessen and Baden-Würtemberg or is at present in the drafting stage (Berlin, Hamburg, Nordrhein-Westfalen) to define the scope and conditions of the administrative autonomy and structure of the universities; in others the system is still based on general clauses in Land constitutions and individual university constitutions. So far, a pattern has been adhered to with only minor variations. Its basic outline is a follows:

- At the head of a university, a "Rektor", a full professor elected for a tenure of one year, with an increasing tendency to re-elect him once.
- His deputy, the "Prorektor", usually the preceding "Rektor" or the rector designatus.
- The "Dekane" as heads of the faculties; tenure and deputy as for the rector.
- The main legislative body of the university, the "Senat", or "Grosser Senat" (Large Senate), consisting of full professors and representatives of the other academic staff, with a number of committees for various special tasks.
- The "Kleiner Senat" (Little Senate), a kind of university executive committee (rector, deans and elected members).
- The "Fakultäten" (assembly of professorial staff of each faculty) and "Fachschaften" or "Abteilungen" (staff of one discipline).
- The head of the administration; as "Kanzler", he is part of the autonomous university under the rector; as "Kurator", he is a state representative outside the university as a self-administrative body; in practice, however, the difference between the two is no longer of decisive importance.
- The "ASTA" ("Allgemeiner Studentenausschuss", General Student Committee) as executive organ of the student body which may again be represented by a student parliament.

The basic outlines for the constitutions of the new universities were laid down before the "democratisation" debate[1] reached its present height. Their main innovation features therefore do not concern increased student

*1. "democratisation" mainly in the sense of student demand for a greater share in university self-government, cf. Sections II, I and III, E.

participation, but the creation of more manageable organisational units and more efficient policy organs, the abolition of the monocratic position of the individual institute director, and the abolition of "policy monopoly" of the full professors as a body by strengthening the position of the "medium cadres" and giving them a share in the policy organs. Only at Konstanz had the student position in the university policy organs already been significantly strengthened in the original plans.

1. AACHEN

The addition of a philosophy and medical faculty has not led to basic structural changes in the organisation of the university as a whole. The philosophy faculty was established in 1965 by dividing the "Abteilung" (Department) for general sciences into two faculties: humanities and economics were combined to form the philosophy faculty, the remaining science disciplines formed the faculty of mathematics and sciences. A year later, the medical faculty was added; this was a real addition to the university and not an organisational acknowledgement of a development process, as in the case of the philosophy faculty. In addition to these three new faculties, there exist the four traditional ones of the "technical university": construction; mechanical engineering; electrical engineering; mining and metallurgy.

Some of these faculties have been subdivided again into "Fachabteilungen" (Departments), or they will be so divided as soon as construction of the corresponding facilities is achieved. The faculty of mathematics and sciences: one department for mathematics and physics, one for chemistry and biology; the faculty for construction: one for architecture, one for construction engineering; the faculty for mining and metallurgy: one for mining, one for metallurgy; the faculty for medicine will not be divided into "departments". The other faculties (mechanical engineering, electrical engineering, philosophy) will not be divided, which indicates that the Aachen type of "department" is not essential for the faculty, but rather a practical expedient to combine closely related disciplines.

A real innovation, however, is the special subdivision of the medical faculty which will represent a general reform in the organisation of medical research and teaching.

The organs of the faculty as a whole, their composition, rights and duties are laid down in a "Preliminary Structure Plan of the Medical Faculty" which was drafted by the foundation committee, approved by the Land Ministry and proclaimed by the university senate.

According to the structure plan, the medical faculty is divided into subject groups (Fachgruppen), sections (Sektionen), and "departments" (Abteilungen - which are, however, "departments" of a new kind). The division into two subject groups (A for basic subjects, B for clinical subjects) corresponds to the traditional stages of medical study in Germany, with five semesters of "pre-clinical" studies in background sciences, and six semesters of clinical studies.

The purpose of the additional subdivision into sections and "departments" is to adapt the organisation to the increasing specialisation in medical science. Subject group A is sub-divided again into six sections, subject group B into eight sections. Each section comprises a group of disciplines ("Abteilungen") that are closely related, e.g., section A2: physiological chemistry, clinical chemistry, pathological chemistry; section A3: physiology, biophysics, bio-mathematics; section B5:

neuro-psychiatry, neurology, psycho-therapeutics and psycho-somatic medicine, child psychiatry; section B8: general pathology, pathological histology, pathological zytology, neuro-pathology, legal medicine.

The sections are to facilitate co-ordination in teaching and training programmes, and to organise and supervise the systematic training of advanced research students, doctorate candidates, and junior post-doctorate scientists. The section heads are to keep themselves informed of research programmes and results in the individual "departments" of the section to insure co-ordination within the section and with other sections.

The head of a section must be a full professor; the heads of the individual departments may be either full professor or scientists of the "Mittelbau" possessing professorial qualification ("Wissenschaftlicher Rat", "Dozent"). The "departments" are not to be firmly and permanently established units; they will be created, regrouped and dissolved according to the organisational and scientific needs and development of each section and the faculty as a whole.

Though it is too early to judge the practical usefulness of this system, the idea of flexibility according to the needs of scientific development and possible shifts in emphasis of research is an important innovation. The stipulation that not only scientists from the top rung of the academic ladder may be heads of "departments" permits a highly promising young man to be furnished temporarily the necessary means and position to carry out an important project without making permanent commitments.

The same principle of flexibility is expressed in the regulation that each "department" has only a minimum allotment of laboratory space and similar facilities; considerable "overhead" space and facilities, however, are at the disposal of the section as a whole, and it is left to the section to determine its common use or allocation for a specified period of time to certain sections.

The main organs of the faculty are the "Dekan", the "Prodekan", the faculty committee (Fakultätsausschuss), the subject group committees (Fachgruppenausschüsse), and the full faculty assembly (Fakultätsversammlung). In addition, for at least the first five years of the faculty's existence, a "Kuratorium" is to act in a general supervisory capacity.

It is obvious that the faculty, in its divisions and subdivisions as well as its various organs, presents an unusually complex structure, the elements of which must be described and analysed more closely.

The most unusual and important body is, without doubt, the "Kuratorium", a kind of Board of Supervisors for the critical period of the first years of establishment. It consists of the "Prorektor" of the university (deputy rector), the chairman of the founding committee for the medical faculty, the university "Kanzler" (head of administration) and four professors of medicine to be chosen by the university senate from the professorial members of the founding committee; these latter four members need not be (and in fact are not) present or prospective members of the Aachen faculty. From the Aachen faculty, the "Dekan" and the two "Prodekane" (heads of subject groups) participate in the meetings, but have no right to vote.

The main tasks of the "Kuratorium" are:

- to ensure that the principles of the preliminary constitution and the structure plan are followed;

- to control and guide faculty policy;
- to appoint the dean, the heads of sections and departments, and deputy deans for special assignments (e.g. student counselling; construction plans); for deans and deputies, appointment is made upon proposal by various faculty organs (for dean: the joint subject group committees; for special deputies: the faculty committee); for section and department heads, the board will ask for faculty committee proposals, but is not bound by them;
- to discuss the faculty's budget proposal and represent it before the university;
- to establish principles for the distribution of any "non-earmarked" funds that become available;
- to decide on the establishment or dissolution of "departments" and on the re-grouping of "departments" between the sections.

The "Kuratorium" acts not as an agent of the faculty, but of the university senate. The senate may, after five years, decide whether the "Kuratorium" is to be dissolved; if so, the senate must also decide to whom its responsibilities are assigned.

The "Dekan", appointed by the "Kuratorium" upon proposal of the joint subject group committees, leads the faculty with the support of the faculty committee, but is responsible to the "Kuratorium". Together with the regular deputy deans, he is to ensure that the academic programme and examinations comply with the regulations.

The regular "Prodekane" (deputy deans) are the heads of the two subject groups. They are elected for two years by the heads of sections and "departments". Special deputy deans may be elected by the faculty committee for appointment by the "Kuratorium".

The faculty committee consists of the dean, the two regular deputy deans, one head of section and one head of "department" for each subject group, and one head of "department" who is not full professor. In its general function, it corresponds to the "inner faculty" (engere Fakultät, comprising all chairholding professors plus a certain number of professors not occupying chairs) of a traditional German university faculty.

The subject group committees consist of the respective deputy dean, heads of sections, heads of "departments", and representatives of other academic staff of professorial rank. For certain procedures (e.g. election of dean) the two committees meet in joint session.

The faculty assembly consists of all members of the faculty. Its function is limited to giving the faculty its opinion on certain issues and making proposals on changes in the preliminary constitution. These proposals are addressed to the senate via the "Kuratorium".

Finally, the conference of heads of "departments" for each section, under the chairmanship of the head of section, meets to discuss and regulate such questions as study plans and course programmes, distribution of laboratory space, and allocation of free research funds according to the principles established by the "Kuratorium".

Thus, the organisation as well as the distribution of policy functions of the medical faculty at Aachen differs radically from the traditional pattern. No significant feature of the traditional medicine faculties has survived. The "Kliniken" (university hospitals) as organisational units

and the greatest strongholds of individual power have disappeared, the functions of heads of sections and heads of "departments" are new, the professors not occupying chairs have many rights, a great deal of responsibility rests with collegiate bodies rather than individual "monocrats". By comparison, the Konstanz pattern, at best, looks like a half-hearted reform. Yet the Aachen plan has so far not had a great impact in the national discussions on university reform. This fact might be explained by a number of outside factors: the addition of a new faculty to an old university does not attract the same general interest as the establishment of a totally new university (Konstanz) or a new separate "medical university" (Ulm); the Aachen faculty has just begun to function and many chairs are still vacant; construction has only been begun.

However, there seem also to be inherent reasons why a certain amount of scepticism might be justified. One is the very "perfectionism" of the system. There has been built into it the essential prerequisite for reform, i.e. the possibility of adaptation to new needs and developments. For this system, as for any other, successful reform will depend to a large extent on the spirit and skill of the first generation of leaders who use the instruments of self-administration and co-operation. But this is just where an essential problem seems to lie. For at least the first five years, perhaps longer, all real power over faculty policy lies with the "Kuratorium"; this gives the self-administrative organs an air of unreality, and is likely to cause members of these organs a feeling of frustration. The medical members of that body are renowned authorities, but from other universities; the Aachen university representatives are not of the medical faculty; the few members of the medical faculty have no right of vote. Even if, at the beginning, a new foundation needs guidance of a special board, the Aachen system of having the board in power so long and, at the same time, excluding from it all those who are actually responsible for the functioning of the new structure is rather extraordinary.

This must not be taken, however, as an incident of professional or inter-university rivalry. The composition of the "Kuratorium", especially the non-Aachen professional members, shows that the university has placed great faith in the experiment. All seven professional members of the board are renowned and experienced university professors, and some are well-known spokesmen of reform and critics of the traditional pattern of medical studies, medical faculties, and professorial attitudes. This is perhaps where the reason lies for the Aachen system: in no other faculty is the introduction or organisational and structural reform as difficult as in that of medicine, more particularly, in the clinical subjects of medicine. It is there that the hierarchical element in university structure, i.e. the dependence of all levels of staff on the clinic director, finds its sharpest expression; also the financial conditions of the director's position are abnormal.

Contrary to similar projects in Ulm and Hanover, the founding fathers of the Aachen faculty seem not to have relied upon the energy of a new medical faculty to develop a new organisation and a new attitude among its individual members. They have tried, therefore, to regulate the development by pre-arranging every detail and reserving control for a longer initial period.

In view of the situation, we find this understandable but still feel that some means should be found of sharing with the "first generation" scientists the general responsibility. One means can be found in the preliminary constitution which states that the "Kuratorium" may decide

to delegate any of its responsibilities to the faculty committee. The general expectation seems to be that the "Kuratorium" - whose members are living in all parts of the country - will reduce its meetings and activities in proportion to the degree in which the new faculty proves capable and willing to carry out the reform plans.

2. BOCHUM

As has already been pointed out, the main novelty in the internal structure of Bochum is the division into 18 departments instead of the traditional larger faculties. For the administrative organisation and the structure of academic self-government, however, it has had surprisingly little consequences. In fact, the structure plan points out very clearly that the purpose of the new departments is indeed to re-establish the original function of the faculties under modern conditions with regard to the organisation of science and research; it states with equal clarity that the 18 departments as units for university policy and administration are to function as 18 faculties again. Following strict logic, the professors of one department are again called "Fakultät". "Thus the inter-dependence between the scientific and organisational structure of academic self-administration, which was a feature of the original faculties in the classical sense, will be re-established under modern conditions[1]".

The Constitution ("Satzung") of the university, which has not yet been approved by the Education Ministry but is followed, shows no significant innovation in academic self-government except for a longer tenure of the rector. He holds office for two years, but has an initiation period as "rector designatus" one year before, and remains as "pro-rector" for a year afterwards. The heads of the 18 departments are constitutionally exactly like the "Dekane" of the classical faculties, except they are more numerous.

The main bodies of self-government, faculty and senate, correspond in composition and function to the "Innere Fakultät" and "Kleiner Senat" of traditional universities. Professors not occupying chairs and staff members possessing professorial qualification ("Privatdozenten") can comprise up to one-third of the total number of faculty members, the remainder being chair-holding professors. The recommendations of the founding committee included other levels of academic staff in the representation, but the constitution did not follow that suggestion.

Corresponding to the traditional bodies of "Grosse Fakultäten" and "Grosser Senat", Bochum has the "Grosse Fakultäten" and a "Konvent". As elsewhere, two representatives of the assistants and two of the student body have full rights of membership, including the right to vote, in matters concerning the groups they represent. As elsewhere, too, it is the faculty and senate who decide whether a certain point on the agenda concerns either of these groups.

However, in the aspects of organisation and management not related to the organs of university self-government, some demands by reform advocates have been met.

As a principle, the most important one probably is the regulation concerning the directorship of university institutes. The institutes (also including "seminars" of the individual disciplines in the humanities and various "clinics" in medicine with special features) play an important

1. Empfehlungen, page 60.

role in the desire to establish links between the different disciplines. It is in the institutes of the individual departments where the academic work, especially in research, takes place in each discipline. They are also the units of academic life where the much-criticised "monocracy" of the institute director (or chair-holding professor) with great power over the professional opportunities and fate of the lower ranked academic staff is located. At Bochum, however, the principle of the office of acting director rotating among all professorial staff members has been adopted.

In the fields of non-academic administration, a number of measures and experiences in connection with modernisation and rationalisation are of interest. Under the "Kanzler" system (where the head of non-academic administration is under the rector, not a "Kurator" beside him) the position of the Bochum "Kanzler" is rather strong. Unlike traditional systems where administration is divided into a business side - budget, construction, general services - and an academic side (or a state side and a university side), the Bochum "Kanzler" is head of the university administration as a whole (in protocol, he ranks third after rector and pro-rector).

The main supervisory and policy organ of the autonomous university for the administrative side is the Administrative Committee ("Vervaltungsauschuss") which consists of four chair-holding professors - elected by the senate for a tenure of four years - and the rector; the "Kanzler" has the right to attend and speak, but not to vote. Long tenure and the regulation that only one member is replaced each year are to insure continuity.

This body has proved to be competent and efficient in administrative matters, and is watched closely by the senate lest it should become too independent. However, it does not answer the basic need of the university administration, that is, a governing board whose members can balance the legitimate interests of individual departments with those of the university or society as a whole. This is not to say that a professor is unable to weigh the interests of other disciplines as well as his own, but it does mean that, with increasing intensity, university reformers - mainly professors and senate members themselves - call for a representation at top policy level who understand the structure of science and the university and their function in society not directly connected to one particular branch of science at the university.

In this connection, the attitude of the founding committee to a reform idea, which has since gained in importance, may be of interest: "It has in the past few years been frequently discussed whether self-administration might not be expanded into the financial realm. The underlying idea is that university autonomy is not really complete and effective without including full responsibility over the distribution of public funds and thus over the development of teaching and research. That would, however, require a complete change not only in the relationship between state and university, but also in the structure of academic self-administration. Therefore, the proposal should not be considered[1]".

In early 1968, the Land Ministry suggested to all universities that the "annual lump sum allotment" procedure for part of the funds be adopted. A final decision has not yet been made, but the general reaction seems to have been one of hesitant approval. Some critics say,

1. Empfehlungen, page 59.

not without justification, that as long as the Land was relatively prosperous and felt able to meet all reasonable demands, it guarded its authority to decide to which institute and for what purpose every penny and every assistant was going; when funds became scarce in the face of increasing demands, the Land was ready to "pass the buck" to the universities themselves.

On the same issue, the Bochum "Kanzler" expressed what seems to be a general fear: no individual or body at the university is strong and independent enough to make the necessary decision on their individual colleagues claims:

> "... rector and "Kanzler" alone are not powerful enough to exercise the necessary leadership in important and difficult policy issues (especially where the interests of the individual faculties would be affected). The present university senates are not suited for that task, since their members all are clearly representatives of the interests of the respective faculty... Furthermore, the large number of senate members (often as many as 25) makes for inefficiency. This type of senate should be replaced by a small senate or committee whose members should not be representatives of the interests of their faculty, but personalities who feel responsible for the university as a whole. Such a small senate or committee ought to be invested with far-reaching authority for university structure and policy. With no more than eight members, it could be flexible and efficient. The student body and the "Mittelbau" of academic staff should be represented. Two or three personalities of public life, e.g. representatives from industry or the community, should be included... Such a system of "checks and balances" would preclude the possibility of one part overpowering the others and would, I think, be able to put the demands for inner reform into practice. Such a system would also allow for the delegation to the university of many functions that are now exercised by the Ministry... I think that the system suggested here would at any rate correspond better to the basic character of the German university than the "American President" system or the "permanent rector"; above all, it might invalidate in future the frequent and not wholly unjustified complaint of the state administration that the university is inefficient and uneconomic[1]".

One may not agree with every detail of the line of argument; it seems doubtful, for instance, whether one can speak of "checks and balances" within such a body or even whether a balance should be attempted among university interest groups (students, "Mittelbau", professors) and among rector, "Kanzler" and public representatives in such a body. Still, the quotation is interesting as a pointed statement of the possible risk in transferring state responsibility to the university without, at the same time, strengthening the central authority of university self-administration against particular interests. Thus it is quite logical that the proposals for reform of university administration which the Land Conference of University Rectors[2] presented to the Nordrhein-Westfalen Minister of Education in May, 1968 foresee greater financial authority of the individual university and, at the same time, a strengthening of the rector's authority over the influence of individual subject groups and professors.

1. Deutsche Universitaetszeitung, No. 11, 1967, page 9.
2. Under the chairmanship of the Bochum rector; for details, cf. Section III E.

In the sphere of administrative techniques Bochum has introduced a number of new measures in the interest of rationalisation and economy.

One which received much publicity was the use of punch-cards for course registration instead of the traditional forms and study books. The use of data processing machines, which has played an important part not only in technical calculation but also in organisational and operational planning for construction, is also intended for administration. In technical details, there is in principle no difference between a university and a business enterprise (e.g. statistics, accounting, salaries).

What may be of interest, however, is an indication of what a critical observer called "the conflict between modern technological possibilities and traditional administrative thinking": the administration had favoured the use of all possible modern means to rationalise routine operations, but had considered it a matter of course that these complicated machines should be handled by the same type of clerical staff that would have carried out the operations in the traditional ways, i.e. civil servants of the administrative branch. As a result, there was a series of break-downs or faulty operations due to wrong handling or programming, until an adequately trained technologist was required.

Another innovation of considerable practical importance is the establishment of a central purchasing office. Under the traditional system, every chair or institute would order its books, equipment and material according to the funds allocated to it in the university budget by the Land. Some of these funds (for books, research equipment, positions for assistants and clerical staff) will often have been part of the bargain between the professor and the Ministry of Education as conditions for his accepting a call to the chair, or refusing another.

At Bochum, the same system applies in principle[1], though some of the negotiations with a prospective new professor are carried out by the "Kanzler" rather than directly in the Ministry, thus giving the university a better chance to weigh the individual demands against the overall interest. Once an agreement has been reached, however, it is signed by the Ministry, and the effect of having certain funds for equipment and personnel disposed of in advance seems to be about the same as when these "acceptance conditions" are negotiated with the Ministry directly. Through the central purchasing office, however, considerable savings have been possible. The idea of such an office met with resistance at first, the professors fearing they would not get the type of equipment needed or wanted, but now it functions smoothly, on the following principle:

Routine stock and equipment (furniture, office machinery and material, standard research material) are selected and ordered by the office in order to benefit from the economy of mass orders. Special stock and equipment (research apparatus and material, books) are selected by the individual institute, but ordered through the office which tries to reconcile the specific needs as economically as possible.

The office also organises routine overhauls, a stock of spare parts, etc. For quality control, it keeps repair cards on the main types of machinery. These cards revealed, after a year, that the most expensive and most highly demanded typewriters needed repair much more frequently than a type less expensive and of equal quality. Against some

*1. The Nordrhein-Westfalen Ministry considers, however, introducing a system of annual lump-sum allotments for all its universities.

opposition, the office enforced the regulation that only the latter type would be purchased in future. In another case, the office imported a costly research apparatus much cheaper than an institute director at another university had done because the office had a foreign trade specialist familiar with the import-export laws of the two countries who could arrange for the greatest trade advantages possible.

Other attempts at rationalisation, following similar lines and advocated by the same persons, have had only partial success against professorial individualism. They concern such service installations as workshops, spare part stocks, and photo laboratories; the idea was that several institutes use the installations in common. Success depends largely on the willingness of the institutes and their directors to co-operate. In the earth sciences, what seems to be an ideal solution has been found in the establishment of one large central workshop with excellent machinery for common use. But there still remains unnecessary duplication in such installations as separate spare part stocks for machinery and photo laboratories. For copying and duplicating, a central shop has been set up against considerable resistance from the individual institutes; it was accepted, however, on a probationary basis with the understanding that if the central office led to delay, several smaller offices would be established. So far, it has passed the test.

These last items may seem of minor importance, but they illustrate the practical possibilities and difficulties in implementing the general demand for managing the economic and administrative sides of a university according to the rules of modern business administration.

There remains one field in which organisational innovations for the benefit of administration as well as academic work have been introduced: the library system. In its traditional form, its characteristics are typical of the German university:

- a central university library with closed stacks and a 30,000 volume reading room from which books cannot be taken;
- special libraries for each seminar or institute, often again divided into a closed section and a reference section in a reading room;

The system has frequently been criticised on various grounds:

- the user must go through a complicated and time-consuming procedure of looking for a book reference in the catalogue, filling out the order form and waiting, often only to discover the book is not available;
- a particular book must be traced both in the central library catalogue and in the institute library catalogues;
- a particular book may be purchased by several institutes, though neither uses it frequently;
- a particular book is requested by a large number of people at the same time, e.g. participants in a seminar, but only the first comer gets it and may keep it for two weeks.

A radical change was attempted when the Free University was founded in Berlin: no central library was built, instead, larger institute libraries. After some years, however, a central library was considered indispensable and was added.

Bochum tries to achieve greater flexibility and co-ordination within the traditional pattern. Part of the stacks is kept as an open-shelf system, and several copies of basic works are kept in stock. All books of all university libraries are registered in the central catalogue. The staff of the central library supervises and advises the specialised libraries to assure co-ordinated purchasing and identical registration. The ordering system for the central lending library has been computerised, so that the user and the staff need not fill out any forms and each book, if available, can be delivered immediately. The user takes the book from the shelf, takes a card from it and puts that card together with his student card into the computer. The computer makes the proper registrations, will send a reminder if the book is kept too long, and will inform the staff at any time where a given book can be found.

3. KONSTANZ

The University of Konstanz does not yet have a constitution. On 1st March, 1966 the Minister of Education of the Land Baden-Würtemberg laid down the basic principles for the structural development in a "Vorläufige Grundordnung" (Preliminary Basic Regulations). As soon as the university has 30 chair-holding professors, with at least eight in every faculty, it may draft its own constitution which, after being passed by the senate, will be submitted to the Land government for approval.

According to the preliminary basic regulations, the university is an establishment of the Land with the right of self-administration; its legal status thus is the same as that of the other German universities.

The basic principles affirm that the development and organisation of the university are to follow the proposals of the foundation committee's report which has officially been approved by the Land government. Thus the basic recommendations of the foundation committee become rules for structure and organisation. Since the actual development of the university is still in its early stages, consideration of constitution, administration and management must be based, to a considerable extent, on plans and principles rather than actual experience.

One of the standard issues of university reform is the question of whether the traditional system of a "Rektor" elected for one or two years is still appropriate for the kind and importance of tasks a man heading a modern university must fulfil. So far, the universities have upheld this system because they feel it essential that the "Rektor" be one of the chair-holding professors and return to his position upon expiration of his term in office; only in this way can it be guaranteed that the head of the university will be familiar with the needs and problems of research and teaching, and that the collegiate structure of university self-administration will not be jeopardised by an authoritarian personality at the top. An attempt has been made to meet the inherent problems and deficiencies of the system by increasing administrative staff and achieving greater continuity through advance election, giving the "rector designatus" a year as pro-rector before taking office.

So far, no German university has accepted the president system, i.e. for the long-term or life-time appointment or election of a personality who need not be a university professor himself, but is acquainted with the problems of university policy, especially the legal, economic and organisational aspects.

The new Baden-Würtemberg law provides for an alternative; the university may decide to elect a short-time Rector or a long-time president. But the proposed personal and financial regulations seem

to make the second alternative unattractive and therefore impractical in its realisation. The president would receive a fixed salary equivalent to that of a deputy director ("Ministerialdirigent") in the administration. Although this is a higher salary category than for a full professor, the "extras" that the "Ordinarius" often receives may put him, in effect, above the deputy director salary level. It seems rather certain, therefore, that under these conditions the "Rector" system will be maintained.

There is increasing readiness, however, to follow a middle course between the one-year rector and the life-time president from outside[1]. The idea is to meet the demand that the head of university be familiar, through personal experience, with academic teaching and research, and the demand for continuity in the university administration. Konstanz elects, as permanent rector, a renowned academic scholar with special experience in the problems of modern university policy and administration. Upon taking office, the rector is relieved from all professional obligations in research and teaching; in his legal status, however, he remains a civil servant with professorial status. He can be recalled from office by the Prime Minister of the Land upon application or with the agreement of the large senate.

The foundation document allows the possibility of electing a rector who has not been a university professor but is intimately acquainted with scientific life. Such a step would certainly be a decisive rupture in German university tradition but, in reality, the present practice at Konstanz of making the office of rector a separate life-time profession already contains the main elements of such a decisive change. The objections against such a system have been noted in the case of Bochum; however, in view of the need for a stronger and more independent power at the head of the university to cope with the broadening scope of administrative tasks, arguments in favour of the Konstanz system seem to have greater weight than those against it for the sake of tradition and collegiate self-administration.

The "Kleiner Senat" will be the most important academic body at Konstanz. According to the preliminary regulations, it will consist of the rector as chairman, the speaker of the "Grosser Senat", the deans of the three faculties, and two other members to be elected by the "Grosser Senat" for one year. Its tasks are spelled out in the foundation recommendations as follows:

- to be responsible for all matters not under responsibility of any other university organ;
- to decide on questions of competence between other university organs;
- to make decisions which serve as guide-lines for university policy and administration;
- to discuss the university budget proposal, and comment if its opinion differs from that of the rector, with whom authority over the budget proposal rests;
- to decide on the priority list for construction measures.

These terms of reference make it obvious that the founders wanted to create, with the "Kleiner Senat", a particularly strong and efficient

1. For the most recent development, cf. III, E.

body, on the one hand, to balance the powerful position of the rector and on the other, to provide the university - through rector and "Kleiner Senat" together - with a governing body strong and efficient enough to handle the important tasks of university policy (including those delegated by the Land Ministry) more competently than the traditional organs of university self-government could do.

The "Grosser Senat" was initially formed by members of the foundation committee and the first few chair-holding professors. Actually, four of the first professors were also members of the foundation committee. This seems of considerable importance, especially in comparison with the Rühr University at Bochum. There, the foundation committee (16 professors, plus the secretary-general of the WR) had proposed to the Ministry the first professors to be called to a chair, but in principle no member of the group itself should seek or accept such a call. The result has been that actual development, while based on the written text of the foundation recommendations, was carried out from the beginning by an entirely different group of persons. At Konstanz, on the other hand, the idea that some of the ten foundation committee members would become Konstanz professors seems to have been encouraged from the outset; the inherent risk that those persons might be tempted to think too much of their own future position and not enough of the university as a whole was accepted, and the result shows that this was justified. A similar procedure has now been adopted in the cases of Dortmund and Bielefeld.

When nine full professors had been appointed, the foundation committee members resigned. The "Grosser Senat" now consists of:

- all chair-holding professors;
- two representatives of non-professorial academic staff with professorial status, elected for two years;
- two representatives of non-professorial academic staff and assistants, elected for two years;
- two student representatives, elected for one year.

The members elect a speaker for one year who carries the title of pro-rector.

The preliminary regulations of the Ministry mention only the task of proposing a rector to the Prime Minister and the role of the "Grosser Senat" in the eventuality of the deposition of a rector. The foundation recommendations, however, also give it a share in the "Berufung" procedure, i.e. the nomination of candidates for appointment to a chair. In practice so far, the "Grosser Senat" has a decisive role in this procedure. First, the faculty will inform the rector of its intended proposals. The rector then appoints a rapporteur who belongs to a different faculty. The rapporteur presents his report on the candidate to the "Grosser Senat", where it is discussed and voted upon. The report and the Senate's comment are then submitted to the Ministry together with the faculty's own "Laudatio" on the potential candidate.

The main difference from the traditional pattern here is the full membership of student body representatives; at other universities, as was explained in the case of Bochum, their participation is limited to those points on the agenda which affect student affairs.

It may almost seem surprising that Konstanz, definitely the most innovative German university at present, should have maintained the

traditional and much-criticised sub-division of the university into faculties. One of the reasons was the fear that division of the larger faculties into departments of the Bochum type might result in the creation of more smaller "faculties", thus multiplying the obstacles to reform, co-operation and integration. The founders preferred to retain the traditional pattern, but to change its internal structure and re-arrange the weight of the various units in the different spheres according to modern needs.

Thus the faculties - comprising the chair-holding professors and representatives of the other ranks of academic staff plus the students - are maintained as organs of university self-administration. However, the basic units for academic work are the subject group ("Fachbereiche") within the faculties. Though not officially organs of academic self-administration (and therefore discussed in detail under G and not here) but of academic work, the subject groups have taken over the traditional functions of the faculty to a considerable extent. The tasks remaining to the faculties are essentially those of proposing candidates for a call to a vacant chair and regulating and conducting the procedure leading to the doctorate and the "Habilitation" (post-doctorate degree granting professorial qualification).

It may be interesting to compare this aspect of university structure at Bochum and Konstanz. At Bochum the traditional faculties were divided into 18 departments in the interest of academic work, especially of inter-disciplinary research. Within the structure of university self-administration, however, the departments appeared again as traditional faculties, only more numerous. At Konstanz, similar needs which led to the creation of departments at Bochum led to the establishment of subject groups within the faculties. Since this was done in the interest of academic work, their significance was in principle limited to that sphere. It may have been accidental that, as a result, they drained the traditional faculties of a good deal of their traditional power. There is an exceptionally powerful body - rector and "Kleiner Senat" - at the head of the university, so between these two levels, the faculties (only three at Konstanz) cannot hold too strong a position. The question is whether the rector and "Kleiner Senat" will be strong enough to prevent the subject groups from acquiring too much administrative power and independence and developing into so many faculties again. In view of their structure - exclusion from the hierarchy of administrative organs - and the strong position of the top body, this threat does not seem very likely.

With regard to administration in the narrower sense, Konstanz is also experimenting. To some extent, this may be a logical consequence of the permanent rectorship and the large scope of responsibility. The principles underlying the system would probably preclude putting a "Kurator", i.e. an independent representative of the Minister, at the head of university administration. In fact, the Konstanz rector himself is the head of university administration. In all administrative matters, a head Administrative Officer acts as his permanent deputy. In his actual functions, he may be compared to the "Kanzler", but his legal status is different.

In the field of technical procedure, similar solutions to those at Bochum have been sought. In addition to the Head Administrative Officer, there are two independent positions at the Head of administrative units within the university: a library director and a technical director. Of these, the office of technical director is an innovation of special interest. It was not foreseen in the original foundation plans

but created following practical experience. He is responsible for all technical installations not only in the general service sector but also in teaching and research, e.g. the purchase and supervision of institute equipment and costly research apparatus.

The basic aim of the office of technical director, as of the general administration and library offices, is to relieve the scientists from general administrative and technical work which, in the traditional university, takes up so much of their time. No professor or assistant purchases any equipment or material, furniture, books or paper himself, but only informs the central services of his needs. Here the item is selected and purchased, unless the request is considered unjustified. As at Bochum, among the motives are those of economy, rationalisation and saving the individual scientist from cumbersome work.

With regard to the library system, Konstanz is trying a solution that is, one might say, the opposite of the unsuccessful experiment of the Free University at Berlin which was just mentioned. At Konstanz, the architectural design for the humanities and social sciences is thus that the buildings of the various subject groups are attached to the library like the teeth to a rake, or, more precisely and in the terms of a university member, "like ten cows feeding from two troughs that are put at a right angle", though one would have to arrange the animals at different floors as well to come close to the actual picture. The point is that in this way subject group libraries and central library are amalgamated, with a certain savings in construction and operational expenditure, and a hoped-for increase in efficiency.

Other elements of university structure fall under teaching and research and will be discussed there in greater detail. But since they also have significance for the general organisational structure, some points will be briefly indicated here.

Probably the most important one is to break up the "monocracy" of the research institute, or rather to abolish the traditional research institute altogether while assuring that its important functions continue to be fulfilled. The single measure of great importance is that every university scientist, down to the youngest assistant, can apply directly to the research committee[1] for research funds. Of similar importance are such simple technicalities as determining general rules for the number of square metres of floor space for assistants as a minimum, or for chair-holding professors as a maximum.

Other measures fall mainly into the field of inter-disciplinary research, but also tend to avoid the development of hierarchical structures for which the traditional institute is a favourite breeding ground. Such measures are the creation of "groups" and "centres" for certain inter-disciplinary research projects. "Groups" are formed to work for a shorter period of time on a specific project with only temporary need for personnel and equipment. Examples for possible projects are such topics as "Modern North America", "Theory of Art and Literature" and "Problems of Mass Communication Media and of Cybernetics". The "research groups" will be assigned rooms, research equipment and funds, and an assistant for administrative as well as scientific work and co-ordination for a maximum of four years. They will be created upon the initiative of individual scientists, and participation of outside scientists will be possible.

1. Cf. page 95.

The "Centres" are of a more permanent nature and resemble inter-disciplinary institutes. They have permanent staff and quarters and work on broader-scoped projects, often overlapping into several disciplines. The scientific members who hold chairs in a subject group remain members of that group, however, and the centres are to be dissolved or changed in designation after a number of years. In this way it is hoped to avoid the possibility of these centres becoming permanent institutes and developing an isolated hierarchical structure of their own.

It is interesting to observe that the plans for Bielefeld university, which in many ways resemble those for Konstanz (limitation of disciplines, emphasis on post-graduate research), include a central institute for inter-disciplinary research similar to the Konstanz centres, though occupying an even more important position within the university. It is conceived as a large set of facilities that is to provide the infrastructure for a variety of temporary groupings of scientists, including guest researchers from other countries, to work on specific projects. The basic principle in both cases is that inter-disciplinary research is, by definition, indefinite and fluctuating, and that any attempt to institutionalise it in permanent structures is likely to defeat the purpose. All that can be done is to provide a framework; otherwise any field of inter-disciplinary research is likely to develop into a discipline of its own and then increase the need for further inter-disciplinary institutes.

Another important factor in the field of research, but with great impact upon the administrative structure as a whole, is the existence at Konstanz of an all-university research committee that decides on the allocation of research funds. This was previously a function of the state, and the fact that the representatives of Bochum and the other Nordrhein-Westfalen universities hesitate to assign this function to the traditional system of university self-administration has been mentioned. The research committee is certain to play a major role in the establishment of priorities in university research. The centralisation of responsibility in one special academic body means, on the one hand, a great strengthening of university autonomy as a whole, on the other, a considerable loss of independence and power for the individual chair-holder and institute director.

F. RECRUITMENT AND STATUS OF TEACHERS

Academic teachers in Germany are civil servants. Thus any measure by an individual university affecting recruitment and legal status must comply with the framework of civil service statutes, or the statutes themselves must be changed. Only with regard to academic status do the individual universities have greater scope for reform.

The civil service status does not make a professor comparable, in every respect, to certain ranks in the administrative civil service. Both have life tenure and are entitled to certain privileges such as financial grants-in-aid from the state in case of severe illness. In most other respects, however, the professor's status differs from that of the regular civil servant (administration, foreign service, teaching, military, et al.): upon retirement ("emeritus") the full professor will continue to draw his full salary, whereas the civil servant will receive approximately 75%; the salary scale for university teachers corresponds in amount and principle (a small raise automatically every two years, up to a certain maximum) to that of other civil service ranks (e.g. for a full professor to those of a "Ministerialrat" and a Colonel), but for professors the otherwise stringent rules of the system permit great flexibility (e.g. special addition to basic salary "jumping" in increments); the professor also receives an additional amount per semester as replacement of the former practice of "Kolleggeld" (course fees - originally the professor received a certain amount per student per weekly course unit each semester). Thus a full professor may, in fact, have a monthly salary of DM 5,000 compared to the "Ministerialrat" who receives about DM 3,000. With all these possibilities, a sought-after scholar has considerable chance for successful bargaining between competing Ministries of Education; besides, in many disciplines his income from special work - as legal adviser, expert, surgeon, head of research projects, author, etc. - may exceed his regular salary. Furthermore, the normal civil service career regulations - e.g. minimum period of service required before promotion or between promotions; possibility to skip one stage in career only in very exceptional cases - do not apply to the academic career. A professor need not have been an assistant first; on the other hand, an assistant does not have life tenure and is not entitled to automatic promotion after a certain number of years as are his colleagues of equal rank in some other branches of the civil service.

For appointment as full professor, however, a special post-doctorate examination, the "Habilitation", is usually required. The normal procedure is for an assistant to work on his "Habilitation" thesis and submit it after four to seven years' experience as an assistant. The thesis is to offer an important and original contribution to research and prove the candidate's special qualification for scholarship. If it is accepted by his professor and, upon the latter's proposal, by the faculty, the candidate must defend it in a colloquium before that body and will thereupon receive the "venia legendi", permission to offer lectures and seminars at the

university. He is now a "Privatdozent", but will in most cases be accepted into the civil service again as "Hochschuldozent" of "Diätendozent" and, as such (if he is not called to a chair in the meantime), may receive the title of "ausserplanmässiger Professor" (titular professor) after seven years without actual change in academic status.

In the past decade, the need for qualified academic staff in teaching and research has greatly increased; on the other hand, in view of the university structure and the functions to be fulfilled, it was not desirable to satisfy this need only by establishing new chairs. Consequently, a number of new permanent civil service positions have been created for the so-called "Mittelbau" (medium cadre), i.e. qualified scientists who have passed the "Habilitation" examination but have not received a call to a chair. In addition to their legal designation ("Wissenschaftlicher Rat", "Akademischer Rat"), they may also receive the title of professor. The present general expansion of universities has increased the opportunities for qualified people to be appointed as full professors, but at the same time the need for additional staff of the "Mittelbau" and assistant levels has also increased by an even greater proportion.

Following the WR recommendations, the Land Ministries have responded to this need and, in spite of the sharp increase in student numbers, the staff-student ratio, though still insufficient in some disciplines, is much more favourable now than ten years ago. This is largely the result of an over-proportionate increase in positions for "Mittelbau" staff and assistants (including lecturers, Gymnasium teachers delegated to the university, et al.).

The actual call and appointment to a chair issues from the respective Land's Minister of Education. He acts, however, upon a recommendation of the faculty, submitted by the university. This is usually a list of three names, in order of priority, of which as a rule he will choose the first, though not formally obliged to take any of the proposed candidates. Until early 1968 when the University of Regensburg advertised a vacant chair in newspaper announcements, all candidates had to wait to be approached and could officially take no initiative. (Here, too, is an important example of the young scientist's dependence on his professor who may, or may not, mention his name in the right places). Whether a candidate's chances rest on his qualifications alone depends on the breadth of information and the objectivity of the faculty committee which drafts the first proposals. Publications, of course, are an important criterion for determining the potential candidates. The committee will ask the opinion of other experts on the smaller group retained after a first screening.

As a rule, junior scientists of the respective university are not considered. This principle is considered important to assure objectivity of choice and the high quality of the candidate chosen; he is expected to have established his reputation beyond the realm of his own university and faculty.

Once the call is made, negotiations between the Ministry of Education and the scientist begin. If the scientist already has a chair in another Land or if two Land Ministries of Education are competing for him for a first appointment, he has a strong bargaining position, and negotiations may go on for months, the scientist being free in his final decision. The temptation to improve one's position (in most cases, the equipment, funds and personnel of the institute rather than salary) by pretending to consider a call from another Land is obviously great. The Education Ministries try to co-ordinate their policy to avoid overbidding

each other beyond reasonable limits of competition[1] . On the other hand, to attract or keep a renowned scientist is also a matter of Land prestige, and his conditions with regard to equipment and funds for his institute may help the Education Ministry to get from Parliament and the Finance Ministry what it might not be able to obtain otherwise.

Another possibility for using the system in the interest of university policy was demonstrated by a young physicist, Werner Mössbauer who received the Nobel prize for his discovery of the "Mössbauer-effect" as a research scientist in the United States of America. Thereupon every effort was made to attract him to a German university. He accepted a chair at München on the condition that several institutes of physics at the university be combined and re-organised into an American-style department, including collegiate leadership, breaking up of the usual hierarchy, teamwork, etc. Both state and university accepted the conditions, the whole phenomenon being referred to in university reform discussion as the "second Mössbauer-effect" and perhaps considered even more prize-worthy than the first.

The main points of the reform discussion in this field concern the "Habilitation" procedure and the status of the "Mittelbau" staff. The following measures are presently being discussed:

- Advertisement of vacant professional clairs and the right of every qualified candidate to apply[2] ;
- Participation of "Mittelbau", assistant and student representatives in nominating the candidates or deciding on the applications (this is considered a radical demand);
- Acceptance of an excellent doctorate thesis or other publications in lieu of the "Habilitation" thesis;
- The right of a junior scientist to apply for "Habilitation" to a faculty without the special support of one professor;
- More frequent practice of appointment to a chair without "Habilitation" (theoretically possible, but a general practice only in the technological disciplines);
- Establishment of a senate committee to sponsor the junior scientists, especially the "Habilitation" candidates, replacing the individual professor;
- Improvement of the status of "Mittelbau" (more tenure positions).

Except for the somewhat greater role of professors not holding chairs in the academic hierarchy (eligible for acting directors of institutes at Bochum, heads of section in the medical faculty at Aachen), neither Aachen not Bochum deviates from the established tradition in the recruitment and status of teachers.

At Konstanz, too, the general framework of legal conditions and academic traditions has been maintained, but within that framework reforms of considerable consequence have been introduced. In these measures, Konstanz is following the general lines of the 1964 WR "Recommendations on the Re-organisation of University Academic Teaching Staff"; they suggest the following ranks and types of staff :

1. They have agreed, for instance, that a professor who has accepted a call (or has declined it, but been compensated by certain improvements in his position) shall not be made another offer for three years.

* 2. By the end of 1968, such advertisements appear quite frequently in the national newspapers, coming from old universities as well as new ones.

- "Ordentliche Professoren" ("Ordinarien"): professors holding a regular established chair; their task is to represent a certain discipline in teaching and research; they are civil servants with life tenure and have a right to retirement with full salary.
- "Ausserordentliche Professoren" ("Extra-ordinarien"): in the traditional system, the "extra-ordinarius" also holds a chair and life tenure as civil servant, though he has a lower salary and lower academic status than the "ordinarius" (he cannot be elected "Dekan" or "Rektor" unless he has been awarded "personal status of ordinarius" which is frequently done). The main difference in the general university structure is that the "extra-ordinarius" chair is usually in a discipline that is narrower, considered of less importance, or simply newer than those represented by an "ordinarius" chair. The Konstanz "extra-ordinarius" will also represent special disciplines, especially newly developing ones, but will not hold a chair. Instead, he will be used for special functions in teaching and research.

  Like the traditional "extra-ordinarii", he is normally required to have the "Habilitation", but instead of being recruited through the normal system of "accepting a call" upon nomination and negotiation, he is appointed; as the former, he has civil service status and receives a certain payment in addition to the regular salary in lieu of the former course fees but, unlike them, he will retire with the normal pension instead of full "emeritus" pay. As is the case even for the "ordinarius" at Konstanz, the basic funds available for his academic work (material and equipment) are relatively small, the major part of these funds being allocated by a university committee upon application solely on the merit of the individual case or project. The Konstanz "extra-ordinarius" is thus more clearly separated from the "ordinarius" and can more efficiently and flexibly be integrated into the university wherever there is a need.
- "Dozenten": persons who have passed the "Habilitation" examination and are engaged in teaching and research. As "Hochschuldozenten", they are civil servants, but with a "revocable" instead of "life tenure" status; as "Privatdozenten", they have no civil service status. Referring to the unsatisfactory situation of "Dozenten" in the traditional system, the foundation recommendations stress the importance of giving them their share of independence and responsibility in research.
- "Akademische Räte": civil servants appointed with life tenure; they must have completed a full academic training, but at Konstanz the "Habilitation" is not required. Their main functions are teaching and instruction (subject matter, introductory exercises); supervision and operation of research installations (e.g., complicated and costly apparatus); assistance in long-term research projects. They will, as a rule, do assistant work for other scientists but are also qualified to carry out independent research projects if their application is approved by the university research committee.
- "Wissenschaftliche Assistenten" (assistants): young scientists with a completed university education. Some of the general problems connected with this status have been mentioned above. At Konstanz, an attempt is made to make them less dependent by assigning the assistants to the subject groups and not to the individual chair-holding professors; each assistant will alternate between teaching functions (including that of tutor for a group of students) and research work at fixed intervals. The idea is to make the position of the assistant, the "professor in the chrysalis stage", more dependant on

objective conditions by freeing him from the dependence on one individual professor. While being temporarily assigned for his professional training and work to a professor in his subject group, he will also have opportunity for independent work. Further regulations to improve the situation of the assistant and to make more objective his professional opportunity (e.g. in the "Habilitation" procedure) are still being discussed.

Thus Konstanz has, in general, retained the traditional types and ranks of academic staff, except for the new status and functions of the "extra-ordinarius". There are, however, a number of remarkable differences in the position of each which together may serve to break down - or rather prevent the development of - the hierarchical structure which has become the main subject for university critics.

The individual points mentioned above must be seen in context with other elements of the new structure, such as:

- the abolition of the traditional institutes;
- the co-ordination of disciplines through the physical and structural units of the subject group;
- the function of the university research committee, and the right of all ranks of staff to apply to it directly;
- the function of permanent rector and little senate;
- the greater independence of "Mittelbau" staff and assistants, and their share in the work of the subject groups as a whole;
- the plan to waive the "Habilitation" requirement more frequently when filling a chair.

As has been explained, the last point is a rare occurrence in the tradition system except in the technical universities, though the regulations would permit it in other universities as well. Thus the Konstanz regulation that a candidate for a chair or for appointment as "extra-ordinarius" should "as a rule" possess the "Habilitation" does not mean very much. The intention to make exceptions in the rule is emphasised by the Konstanz representatives and supported by a decision of the Baden-Würtemberg government which expressly states that for appointment to a chair in law at Konstanz the "Habilitation" is not necessary.

Another innovation in the same field also meets a frequent reform proposal: at Konstanz, an outstanding doctorate thesis (marked "summa cum laude") can be accepted as "Habilitation" thesis at the same time, though before admission to the examination the candidates must supplement it by further publications or by three unpublished papers of acknowledged quality. Contrary to the usual practice also, work already published can be accepted instead of an original "Habilitation" thesis.

In view of this series of individual innovations, one wonders why the founders of Konstanz left unchanged the much-criticised system of filling a vacant chair by the traditional "Berufung" system (nomination - call - negotiation - appointment). It is important to remember that the prospective new professor for Konstanz negotiates with the Education Ministry only for his salary; all other conditions (space, equipment, personnel, research funds) are under the authority of the university, and the university has already proved its determination to do without a well-known scientist rather than to make exceptions in its rigid principles. But it is just this spirit, combined with the attitude shown towards

the assistantship and "Habilitation" problems, which in our opinion would lead to the logical consequence of inviting free applications for a vacant chair, rather than depending on the nomination from the respective faculty[1].

Another Konstanz innovation is the concept of "permanent guest professors". There are "guest professors" at practically all German universities, i.e. foreign scientists working at the university for a certain period of time. The Konstanz plan goes beyond that. It foresees the appointment of German as well as foreign scientists and of university as well as research scientists (e.g. at Max-Planck-Institutes) in order to enrich the university programme and to strengthen contacts with other universities or with extra-university research. Other objectives of the programme are to attract seientists of international renown for a short period of time, or to recruit for a longer period experts in a field not sufficiently developed in Germany who might be able to make important contributions to the work of research groups and centres. Another possibility is a contract with a scientist giving him the right to lecture at Konstanz whenever he likes, and obliging him to do so for at least one semester at certain intervals.

Whereas at other universities the funds for guest professors are usually taken from those due to vacancies, Konstanz has special funds available in the budget for that purpose, i.e. practically "chairs" for guest professors. These positions are assigned to the centres and the faculties. The number of these professorships suggested by the founding committee is 17.

* 1. In the course of 1968, Konstanz has actually begun to advertise vacant chairs, as have many traditional universities.

G. TEACHING AND RESEARCH

Teaching and research are the basic functions of a university. In the German tradition based on the thinking of Wilhelm von Humboldt, this is expressed in two principles which may be called cornerstones of the concept of a university:

- "Freiheit von Forschung und Lehre" (freedom of research and teaching, traditionally in that order) as the most important aspect of the general concept of academic freedom; and
- "Einheit von Forschung und Lehre" (unity of research and teaching).

Both freedom and unity are interpreted as applying to every member of the academic community, professor and student: there is, ideally, no academic teaching and no academic learning which is not based on and integrated with research by the same individual. The student is - though one must add today "ideally" - not obliged to register for or attend specific lectures or courses in a certain semester, nor is the academic teacher compelled to offer specific courses at specific intervals. In principle, the student is free to determine his study programme overall and for each semester, though practical needs have led to a rather strictly regulated programme in many disciplines, particularly in technology and medicine. Furthermore, admission to advanced seminars and exercises required for admission to the final examination depends on the successful completion of introductory ones. Though the student is not formally bound to a certain study plan, this system of prerequisites obliges the individual to organise his studies or else lose time. As a result, the disciplines with detailed and coherent study plans have been able to keep their average study duration close to the period foreseen in the regulations.

At the same time, the principle of "Lehrfreiheit" (the right of the individual professor to decide in full liberty on the subject and time-table of his lectures and seminars each semester) has also contributed to uncertainty in the study programme. It has happened that a student was not able within the regular number of semesters foreseen to take all the courses and seminars required for the examination because they were not all offered within that time, or because they would not be arranged together in his time-table. However, a considerable number of improvements have been made during the last decade.

The university has never denied the fact that the majority of its students were studying to become judges, doctors or pastors and not professors or research scholars, and it has made concessions to that fact in course programmes and examinations. But the university has upheld the belief that its essential function is to introduce the students to the methods and ethos of scientific research, and not to drill him in professional knowledge and skills. It has further maintained the principle that true academic teaching can be given only by the professor engaged in research.

It is obvious that the recent plans to establish regular study programmes for all disciplines, limit study duration, divide the study programme into a basic programme for all and an additional research programme only for the best, not to mention the occasional suggestion that some excellent researcher might not be a good teacher, have been and to some extent still are considered heresy.

The smallest constituent units of the university for teaching and research are the "ordinarius", i.e. the chair-holding professor, and his institute. The university research institute came into existence in the late nineteenth century when the traditional "chair" became inadequate for the organisation and administration of the new disciplines whose needs in personnel and equipment were of a new dimension. Thus, establishing institutes as a new instrument of university research was in those days perhaps the only way of maintaining the Humbolt principle of unity of research and teaching at the university. Had it not been done, research institutes outside the university would most likely have occurred much sooner and on a much larger scale than actually did happen upon the foundation of the Kaiser Wilhelm Gesellschaft (now Max-Planck Gesellschaft) in 1911. Yet this device was not without disadvantages and risks which became evident with increase in the size and scope of modern scientific research: the "Ordinarius" who was also director of his institute, had to assume the functions of "research manager" as well as those of the administrative, personnel and financial director of a large and complex institution with a staff of a hundred or more persons. As the number of scientific disciplines increased through the development of new fields or the dividing of old ones (e.g. physics) into several new specialised fields, institutes multiplied without becoming smaller or more easy to integrate into the university. The disadvantages became more marked since each institute was a closed hierarchical unit, the individual director's kingdom and practically independent of the outside world including the university as a whole and its organs.

In its 1960 "Recommendations", the WR tried to check the danger which this development implies for the German universities by suggesting either the establishment of "parallel institutes" (i.e. two or more institutes in the same discipline at the same university) or the introduction of "collegiate administration" for an institute (i.e. a team of full professors at the head of one institute, with the acting directorship rotating among them); the latter system had, at that time, already proved successful in the humanities, where the "Seminars" for the individual disciplines correspond in principle to the science "Institutes". These suggestions are presently in practice at several universities, traditional as well as newly established, but it remains to be seen whether they will have the hoped-for general effect upon university structure.

1. KONSTANZ

Konstanz University was conceived from the outset with strong emphasis on research. This designation, however, does not imply that teaching is just an appendix to research and that the traditional concept of the integration of teaching and research is to be abolished. On the contrary, Konstanz aims at developing structures which will permit a more firm integration of research into the university than is at present the case at most universities. The principle of the unity of research and teaching is to be upheld. In fact, the "founding fathers" were influenced by the fear (though they hesitated to express it) that the larger universities maintained only an institutional unity of research and teaching in the sense

that both went on within their walls, but that within each traditional university and each discipline these two aspects of academic work tended to become separated, the majority of professors finding themselves so taken up by their teaching duties that they hardly have time for research. One policy aim at Konstanz is to give each individual scientist a realistic opportunity of doing teaching and research, and each student, at least each advanced student, the opportunity of participating directly in research. The same aim is being pursued at other new universities and through general reform measures for university structure and curricula, but nowhere with such far-reaching and interesting consequence for the organisation as at Konstanz.

Of course Konstanz may be considered a special case which can afford luxury since it is to accommodate only 3,000 students. This may be taken as an indication of scepticism towards the chance of achieving the necessary reforms in today's large overcrowded universities. Giving that argument another turn with a critical view upon the Konstanz concept, one might say it is unrealistic because it neglected the number-one problem of higher education: the increase in student numbers. It will obviously be impossible to accommodate, in universities the size of Konstanz, the student numbers expected by 1980. An essential question will then be whether the Konstanz pattern, if successful there, might also be applicable to larger institutions, or whether Konstanz will remain an outsider on the national university scene - interesting, perhaps successful and enviable, but not of general significance.

The limitation of student numbers, however, must also be considered in connection with the limitation of subjects taught. Even within the three faculties that Konstanz is to include (Humanities, Science, Economics and Social Sciences), it will concentrate in certain sectors rather than trying to cover as much as possible of the whole range of disciplines within each faculty. This, too, will impose certain limits upon the number of students. Actually, with about 1,000 students each, the three Konstanz faculties will be comparable in size to the average faculties of the smaller and medium-sized universities of the country.

The limitation of student numbers, viewed in its proper context, may thus be less significant than at first glance. It is not the quantitative aspects which give Konstanz its importance with regard to the problem of teaching and research, but structural innovations.

The most striking feature on the Konstanz research scene is that the classical place of university research in Germany, the Institute, does not exist. The abolition of the Institute structure is reflected in what at first glance might seem petty administrative detail but, in reality, is of great consequence for the structure and pattern of university life. First, let it be recalled that the traditional institute director is "master of the house" in the full sense of the term including, for instance, full authority in the administration of research funds and the allotment of rooms and space; he is the superior official of the personnel. At Konstanz this will be radically changed. It has been determined that every chair-holder shall have a private laboratory of 70 m^2, but shall not be allowed to decide for himself on the allotment of additional laboratory space; for assistants and candidates for a doctorate, laboratory space has been fixed at 25 m^2, and no professor is authorised to modify that. Experience has shown these regulations to be quite revolutionary intrusions upon traditional privileges: they are an important issue in negotiations with prospective faculty and have already resulted in calls to a chair being declined. It seems probable that this is one explanation for the fact that, so far, mainly "Privatdozenten" (persons qualified for professorship

through "Habilitation", but not yet appointed by a university) have accepted calls to science chairs at Konstanz, and only a few scientists already established as full professors at another university (though in the two other faculties most of the professors have been recruited from the latter group). As one young Konstanz "Ordinarius" put it: "The question is simply whether you really want to do something yourself, that is, do research work, or not". By giving up hierarchical power, the professor is also relieved of much management and administrative work and this gains time for research.

The abolishment of the institute monocracy is hoped to lead to true "democratisation" in the sense of greater freedom in research work for assistants preparing for their "Habilitation", or for academic staff already holding that qualification but not yet appointed to a chair. It would be illusionary, though, to expect complete equality of all post-doctorate university scientists: not even in modern team work in research would such equality seem possible or even desirable. Team work implies voluntary sub-ordination of the individual to the programme of the project, and consequently to the scientist chiefly responsible for it.

The abolition of the traditional Institute also has consequences for construction. The physical unit of the university buildings is not the institute, but the subject group. In the first construction stage, for instance, the Faculty of Science will be provided with a laboratory block of four three-storey buildings. The eight chairs in experimental sciences (two for each subject group) foreseen for this stage will each have one storey. The ground floor will contain all rooms and facilities to be used in common, i.e. the service facilities for the subject group as a whole (large apparatus, workshops, photo laboratories, sculleries). This technical arrangement alone will be incentive for co-operation and co-ordination in the use of facilities; another effect of equal importance is that it allows for greater concentration in the application of funds and thus, it is hoped, for the purchase of the best apparatus and instruments. Another important advantage is a reduction in space requirements[1].

Besides abolishing the monocratic position of the institute directors, the most important innovation in the organisation of university research seems to be - also for the Konstanz scientists themselves - the creation of a Research Commission ("Forschungsausschuss") for the whole university. The importance of this feature can be measured only against the background of the traditional pattern which, for the financing of university research, is the following: Each institute has within its total budget a certain amount for research; the size of the amount depends not only on such logical factors as size of institute, type of research work done, etc., but also (and often to no small degree) on the terms the institute director was able to obtain from the Land Ministry of Education as condition for his accepting the call to the chair, or for declining another one (often in another Land). The amount for research in the regular budget is called "basic provision" ("Grundausstattung"); it rarely allows for more than minor projects. In addition, the institute director tries to solicit additional research funds from other sources, mostly for special research projects (e.g. contract research for industry, public funds such as the German Research Association[2] or the Federal Ministry for Research).

At Konstanz, the present basic budget amounts for the individual chairs are quite low, e.g. DM 2,000 for each chair in the humanities,

1. Cf. pages 125-126.
* 2. "Deutsche Forschungsgemeinschaft" (DFG).

DM 3,000 for empirical social science disciplines, DM 6,000 for experimental sciences. The university as a whole, however, has considerable research funds available for distribution. Applications may be submitted by an individual scientific staff member or by research groups and centres and, according to the present practice, they are submitted directly, without approval of the respective chair-holder. The applications are reviewed by the Research Commission, a committee of the "Kleiner Senat" with the rector as chairman; its members are the prorector, five other scientists (including non-chair-holders) and the leading administrative officer in an advisory capacity. The commission may request the opinion of experts within the university and elsewhere. It advises the "Kleiner Senat" on the distribution of the free research funds.

The importance of this Commission for the structure of research as well as for university autonomy can hardly be emphasised enough. Its significance and efficiency would, in our opinion, be increased even if non-university scientists were included. The membership of a small number of industrial research scientists, for instance, in the main fields would broaden the perspective for development in those fields and be of interest to industry as well.

Approval for financing a certain project from university funds is given for a limited time only, and annual progress reports are required. Thus one hopes to avoid the danger that future research funds in the annual budgets are exhausted in advance by such commitments. It is too early yet to judge whether the inherent risks of this system - the temptation to favour short-term projects with high probability of success over more important long-term ones with a lower success probability; the temptation to prove progress in the arbitrary interval of twelve months, and to "play down" the time and financial estimate at the stage of initial application - are counterbalanced by the obvious advantages of "control by peers" and a flexible handling of the time limit.

The Research Commission keeps a record of all projects. In addition, the whole system of scientific self-control is supplemented by a regulation of the University Senate to the effect that every university scientist must inform the Research Committee of any application for research funds submitted elsewhere. This is a remarkable development, not only as an example of innovation, but as one of the most radical intrusions upon the traditional position of the "Ordinarius" as a researcher. This kind of voluntary submission to certain rules and collegiate control is all the more remarkable since it has not been enforced by legislation but developed and accepted by the scientific community of the university in the work towards self-reform within an autonomous university. Members of the Konstanz faculties are convinced it will be possible to maintain these principles, though there is not much chance that they will soon be generally accepted at all universities and thus might prove a problem in appointment negotiations[1].

The Konstanz professors themselves point out that the real test of their system will come when a larger number of scientists will compete for funds which have not increased at the same rate as the number of staff. It is almost certain that, after the initial stages of construction, the per capita amount available for research will be somewhat less than

1. It may be recalled that the Education Ministry of Nordrhein-Westfalen is at present negotiating a new system of setting up the budgets for all universities of the Land. By providing more global funds and staff positions without identifying the institute to which they are assigned, the Ministry expects the universities themselves to set up a mechanism for efficient distribution and allocation.

now; at the same time, the range of disciplines whose claims the Commission will have to weigh against each other will have broadened. For each individual application, most of the Committee members will not be able to assess the scientific promise of the project or the financial soundness of the application on the basis of their own knowledge; in their decision they will, to a large extent, have to rely on the judgment of a specialist in the field. The problem is that the representatives of individual research disciplines may be burdened with responsibility for the overall research scene which for obvious reasons they cannot fulfil. On the other hand, this dilemma exists wherever research funds are to be distributed over various competing disciplines; in most cases this responsibility is given to a group of scientists representing, among themselves, the entire range of disciplines. Perhaps it is easier, because of personality and not scientific qualification, to judge the merits of a project on the national scale than on the scale of an individual university where the applicant lives next door. We did not have the feeling, however, that the Konstanz professors were seriously worried that their system might "spoil the climate", whereas the administrative head of another new university held the opinion that such a system, once funds became scarce, would lead to "civil war" among the faculty. Various public statements of leading university scientists in different parts of the country seem to indicate general interest of the universities in transferring some of the Ministries' and Parliaments' authority over the distribution of fixed amounts to the universities themselves in the interest of responsible autonomy and scientific efficiency.

Konstanz will have Research Centres ("Forschungszentren") for the co-operation of scientists from different subject groups on specific inter-disciplinary research projects over a limited period of time. The decision to establish a centre rests with the university as a whole, which also officially defines the project and the centre's prospective period of existence. The founding committee has proposed ten years as the maximum life span of any centre.

Each centre is to form an organisational unit with apparatus and equipment, technical personnel and other facilities of its own. One means of forestalling the threat that a centre might develop into another permanent research institute - the limited life span - has already been mentioned; another means is the regulation that they are not to have a director. One of the scientists will be in charge of administration and scientific co-ordination; in all other respects, all participating scientists have equal status. The centre's research funds are administered centrally.

In its basic memorandum, the founding committee has mentioned three centres for possible establishment:

- Centre for Educational Research;
- Centre for Population Research;
- Centre for Research in Speech and Language.

So far, only a Centre for Educational Research has been established. The areas proposed for its research by the founding committee give an indication of the extent to which these centres are expected to do inter-disciplinary work; they range from the classical fields of education - such as the sociological, psychological and pedagogical aspects of the educational system - to biological problems in connection with intelligence research, questions concerning the mobilisation of ability reserves and a number of economic and legal aspects.

It is too early to attempt critical assessment of the Research Centre in idea and in practice. In principle, it seems logical and sound. Some questions will have to be answered by experience, however. There seems to be the latent danger of alienating the scientist from the students in the subject group if he is relieved from teaching obligations while working at the centre. It would seem more logical, in the interest of the scientist and his research work as well as in that of students and the unity of teaching and research, that the scientist for the period of his work at the inter-disciplinary centre be relieved not of teaching obligations, but of any other obligations (including research) while relating his lecture and seminar programme as much as possible to the inter-disciplinary project[1].

Another open question is whether it will be possible to enforce the principle of pre-determined obsolescence; it implies the need to transfer the personnel to new tasks and perhaps a new centre. There seems to be a true risk that temporary but institutionalised co-operation of disciplines on one broad subject will tend towards longevity. This need not necessarily be harmful: even if, for the time element, practice deviates from the original theory, the essential innovative intention of the centres remains legitimate and fertile.

Important for the vitality and efficiency of the centres is that they will have their own research funds and personnel; the concept of inter-disciplinary work and co-ordination is put into a clear organisational and physical structure, not just a loose association of scientists from different disciplines, each with his own funds and personnel.

The designations and projects proposed by the founding committee for the first centres clearly show that the committee members intended the centres to engage in questions where the importance of basic research for social life is greatest. Thus these centres, especially the ones for educational research and population research, are expected to be important in the drive for establishing closer relations between university and state, science and society. The absence in the original plans of inter-disciplinary centres in the natural sciences was explained by the fact that inter-disciplinary work would be encouraged and developed within the science faculty, especially centering around Biology, which is to be established as a permanent "strong point" at Konstanz.

Konstang thus has a unique structure for research. It avoids the traditional and generally criticised system of isolated hierarchical institutes and facilitates inter-disciplinary research. To what extent some of the reservations indicated above will be proved or disproved is yet unknown. Generally, the pattern seems convincing in theory and sound in practice.

2. AACHEN

At Aachen University, the combination of technology and medicine offers the most interesting and important possibilities for teaching and research. The structure plan for the medical faculty points out that the two fields have in common important characteristics of scientific method, "namely to start on the basis of the laws of natural science, and to aim

* 1. In the 1968/69 academic year, two of the three full professors at the Centre for Educational Research are also giving lectures and seminars in the subject groups for psychology and education. At the same time, students are taking part in centre research projects.

at application". Among the possible fields for co-operation are the construction of medical apparatus, development of new materials and relations between data processing and physiology of the senses. Projects already under way at Aachen concern new developments in the construction of artificial kidneys and heart stimulators. Aachen specialists in technology and medicine are also members of the inter-university team which is presently studying the possibility of constructing an artificial heart.

In order to plan and encourage inter-disciplinary co-operation in teaching, and especially in research, the senate has set up a committee on "Philosophy and Technology" and one on "Medicine and Technology". Suggestions in the structure plan, which the university intends to follow, include lectures by science faculty staff for medical students and inter-disciplinary research groups for those two fields, the establishment of an "Institute for Technological Development and Medical Technology", and finally the establishment of a new inter-disciplinary study programme for bio-medical engineering.

The possibilities for putting into practice these and other projects are, however, limited, since neither the construction nor equipment of the former municipal hospitals is sufficient for research work on a larger scale. Following a WR recommendation, the construction plans include a "Clinical Research Centre". In its 1962 recommendations on the structure of new universities, the WR argued that the clinical disciplines had become so highly specialised that no scientist could be expected to master his discipline fully; in university terms, this meant that no full professor could be expected to represent fully the discipline for which he held the chair. On the other hand, the highest possible degree of knowledge within the individual scientist's special sector of the discipline was essential for the patient and for medical research. To meet this situation in medical research, the WR suggested two types of establishment that were to supplement each other: a clinical research centre for the university hospitals as a whole, and the establishment of "special divisions" in the individual clinics. The centre is to have departments for basic research, laboratories and technical installations, course and lecture rooms, and a library. As possible fields for the research departments, the WR suggests immunology, endocrynology, experimental surgery, digestion and metabolism, food and diet. The technical installations are to include stables for test animals, a central workshop, an isotope laboratory, other laboratories for general use and a ward with about 30 beds. It seems that the Aachen plans will follow this proposal rather closely (whereas the founding committee at Bochum decided against a clinical research centre, cf. below). The organisation of the medical faculty into small units is expected to lead to the establishment of the "special divisions" in the various fields of specialisation.

In the study of medicine, the structure plan criticises the traditional pattern in which the student in approximately 8 1/2 years (including internship) is steeped in theoretical knowledge which has not been sufficiently co-ordinated and in which the importance of early bedside-teaching is not recognised. "In order to increase the efficiency of medical training, the committee considers it necessary to limit the subject matter to be taught, to present it from the beginning with a view to professional needs, and to begin bedside-teaching as early as possible in medical training". For details, the Committee suggests that the study plan proposed for the new medical academy (in the meantime, it has received the title "university") of Ulm should be adopted. (In the membership of the committee, there were links with Ulm).

Most of these plans have not yet been tested in practice, so evaluation from experience is impossible. It may be interesting, however, to compare the approach to almost the same situation, i.e. combination of engineering with other disciplines, at Aachen and at Bochum. At Aachen, technology was firmly established when the other disciplines were introduced, and the technologists are clearly the determining factor. Emphasis is placed on practical possibilities for common work without philosophical discussion on the essential unity of science. At Bochum, emphasis seems to be rather on offering the opportunities of a full university to the formerly isolated technologists (though it seems certain this will change once technology is actually established at Bochum).

There remains to be mentioned one touchy problem which Aachen hopes to solve in a rather rigorous manner. It concerns private income of the directors of medical clinics and institutes for operations of private patients, treatment, medical expertise, etc. In the traditional university system, income from these sources sometimes amounts to several times the salary. This becomes an obstacle to re-organising the clinics into smaller independent divisions and is a situation in which the general position of the clinic staff as subordinate to the director can become painfully acute. The Aachen policy planners want to revise the system of private income for medical services. The plan under discussion is to put payments into a common fund which, at regular intervals, is to be divided among all professorial staff on the basis of a point system. The structure plan is vague on the subject, though only to mention it is already a remarkable step:

> "It is desirable that the new structure of the faculty and the principle of scientific team work in the sections be supplemented by new regulations concerning private income. In the interest of their functions as teachers and researchers, work for private income should be limited to a reasonable extent. To provide financial compensation for university teachers who devote part of their time to the organisational tasks within the faculty, the setting up of a faculty fund is suggested. It should be formed by private payments received, the amount to depend on the general situation and the individual case. It is also suggested to establish a similar fund in each section for the equalisation of incomes of the section staff".

Whether and to what extent such a system will prove effective and contribute to a change in the general situation remains to be seen.

3. BOCHUM

The main innovative feature of the organisation of Bochum University - its division into 18 departments instead of the traditional larger faculties - is a result of the basic aims of the founding committee, "the close mutual interlacing of the scientific discipline". In the committee's comments, it becomes obvious that it was motivated by considerations of research rather than teaching or administration:

> "It has rightly been regretted that the disciplines and faculties of our universities have moved further and further apart into positions of isolation, so that the principle of "university" itself is dissolved, and co-operation of research endangered. Furthermore, scientific development calls for close co-operation between hitherto separated disciplines... The task then is to counteract the threat of desintegration and, even more important, to create the best possible facilities for

co-operation in research, thus enabling science to demonstrate its unity and close integration convincingly and effectively to every student in academic teaching as well... The structure plans intend to achieve these aims by deviating from the traditional "faculty" pattern and organising science in "Departments" ("Abteilungen") instead... This principle is based on the conviction that it will be easier and more natural to establish the necessary flexible ties between such departments which correspond to true units of science and are not just accidental cumulations... of subjects[1]".

The main purpose of the departments then is to establish, or rather re-establish, the meaningful units of related disciplines that the faculties once were. Still there remains the danger that, wherever the dividing line between subjects is drawn, new barriers to inter-disciplinary co-operation will arise. The Bochum founders have realised the need for inter-disciplinary links. Wherever they foresaw it, they have institutionalised such links through double or triple department membership of an individual professor, the assignment of disciplines in various departments to co-operate in one institute and the establishment of certain institutes (e.g. East Asian Studies) which have a special "supra-departmental" position.

In order to give an idea of the university structure which follows from these principles, we shall list its departments and characterise briefly the special features of inter-disciplinary contacts and co-operation that are built into the structure.

I. Protestant Theology (15 chairs).

II. Catholic Theology (15 chairs); detailed proposals include establishing an institute for science and theology.

III. Philosophy, Pedagogy and Psychology (23 chairs); of the 23 chairs, the holders of the following are to have full membership also in other departments: mathematical logic (mathematics); philosophy of science and technology (one of the science and/or technology departments); philosophy of law (law); social philosophy (social science); social and vocational psychology (social science); history of medicine (theoretical medicine); history of mathematics (mathematics); history of science and engineering (one of the science and/or technology departments). In addition to one institute each for the four main fields - philosophy, pedagogy, psychology and history of science - there is to be a working group for information media and communications research as a typical and promising field of joint research for philosophers, psychologists, scientists and technologists.

IV. History (13 chairs); the chair-holders for social history, history of economics, and history of technology are to have full rights in the respective departments as well. Attached to the historical disciplines ("Historicum", with one institute), there will be four more disciplines with one institute each: art history, musicology, political science, classical studies. The institute for political science is to comprise at least one chair in that field and a number of subjects from several departments (e.g. constitutional and international law, social politics, political economics, modern history); similarly, the institute for classical studies will overlap into several departments.

1. Empfehlungen, page 6.

V. Languages and Literature (25 chairs); besides the classical and modern European languages, there will be chairs in Sinology and Japonology. The disciplines are each to have an institute of their own (though under one roof), but at least two will be combined with a number of disciplines from other departments in an East Asian Studies Institute. The university intends to give strong emphasis to this institute, and in most departments special chairs have been established to staff the Institute.

VI. Law (16 chairs); the emphasis will be on business law, legal problems of regional planning and of construction engineering; eight institutes (including one on patent law, another on labour and social law).

VII. Economics (8 chairs); with double membership for social and business statistics (social sciences), social history and history of economics (social sciences and history), and geography (earth sciences and astronomy). The main purpose of this department is to train law and engineering students. Bochum will not establish the usual programme for a diploma in business economics; one central institute for economics (mainly library and teaching functions) and several research institutes.

VIII. Social Sciences (7 chairs); most of the chair-holders will have full membership in other departments as well, and about ten from other departments will have corresponding rights in this; three institutes (one for cultural anthropology with emphasis on developing countries).

IX. Machine Tool and Construction Engineering (25 chairs); with double membership for electrical engineering and social sciences for the chair-holder in work and time studies ("Arbeitswissenschaft"); 16 institutes (one for nuclear reactor technology).

X. Electrical Engineering (15 chairs, 9 institutes).

XI. Mathematics (11 chairs, 2 institutes: one for mathematics, one for applied mathematics).

XII. Physics (9 chairs, 3 institutes: experimental, theoretical and biophysics).

XIII. Earth Sciences and Astronomy (11 chairs, 6 institutes).

XIV. Chemistry (10 chairs, 7 institutes, including one for biochemistry.

XV. Biology (9 chairs, 7 institutes, including one for Cybernetics).

XVI. Basic Medical Sciences (7 chairs); with double membership for physiological chemistry (chemistry and biology); 4 institutes (anatomy, physiology, physiological chemistry, genetics).

XVII. Theoretical Medicine (13 chairs); with double membership for radiation science (physics); 4 institutes, statistical data centre.

XVIII. Practical Medicine (22 chairs); 19 university clinics with approximately 2,300 beds; maximum size of one clinic (surgery I and II, psychiatry, gynaecology) 200 beds; radiation centre, central institute for documentation and statistics.

Departments IX-XVIII represent technology, science and medicine, Instead of listing double membership in each individual case, the structure plan suggests that this possibility be used wherever possible and practical.

As has already been mentioned, the foundation committee for Bochum decided against a centre for clinical research. "It must be a principle in the department of practical medicine that clinical research be closely related to practical medical work in the ward. This principle is not invalidated by the fact that research apparatus has become larger and more complicated. On principle, it cannot be envisaged to put patients, into a place like a research centre. Besides, it is not permissible to subject a patient to cardiological and other complicated examinations outside a clinic. Finally, it is to be feared that a clinical research centre might lead to the idea that it held perhaps not the monopoly, but the priority position in the overall responsibility for research[1]".

For medical training, the emphasis on co-ordination and selection in the basic science part of the study programme is similar to that at Aachen. The importance of physiological chemistry is stressed; the committee believes the general backwardness of German science in this field results partly from its isolation. The chair-holder for this discipline will, therefore, be a full member also of the biology and chemistry departments.

Another recent development at Bochum is the introduction of a sabbatical year. Whereas normally research leave is given only upon special application for a particular reason, the Bochum professors may take one semester off for research every three years or a whole year every sixth year.

For Bochum, too, it is too early to judge from experience to what extent the new organisation (departments; double membership; inter-departmental institutes) and its manifestation in the architectural design (one block per department, related departments as neighbours, all built close together around the central administrative and service buildings) have contributed to realising the aims of "mutual inter-lacing of the disciplines". The reply and the impression we most frequently encountered was that "it depends more on the person than on the organisation", but this should not be taken as criticism of the organisation. It remains to be seen whether collegiate directorship and the splitting up of faculties into smaller units will be sufficient to prevent the traditional hierarchical structure which is psychologically harmful to efficient, co-ordinated research and university policy from establishing itself.

1. Empfehlungen, page 56.

H. ORGANISATION AND METHODS OF TEACHING; TEACHER-STUDENT RELATIONS

The structure of academic teaching and the relation of the German student to his teachers may be characterised as follows:

- In view of the large student numbers, individual guidance and tutoring are no longer possible except in a few of the less popular disciplines.
- The academic teachers, and the full professors ("Ordinarien") in particular, are taken up to such an extent by duties not directly related to teaching (reviewing examination papers; administrative matters; advisory functions outside the university, et al.) that there remains little time for individual contact with students,
- With the advancement of science and increasing specialisation, the demands upon the student are greater than ever before. At the same time, the Gymnasium finds it more and more difficult to prepare the students for university work; one reason is the development of science itself which forces the Gymnasium to steer a compromise course between a broad background and specialisation; another reason is that the Gymnasium no longer recruits its pupils from the homogeneous upper middle class which has a strong educational tradition.
- The above circumstances result in a large number of students not being able to take full advantage of the "freedom of study" aspect of academic freedom, that is, they are unable to make a sensible choice among the courses offered without advice and guidance.
- Yet the student is, in principle, still expected to be independently responsible for planning and pursuing his studies.
- These characteristics apply particularly to the first semesters, when the student attends main lectures rather than seminars and exercise courses.
- Viewed together, the factors justify the verdict that the German university is an excellent place for an excellent student but, within its traditional system, not suited for the task of training the equally important and much larger group of "normal" students.

All these shortcomings, broadly generalised, have been known and discussed for years; they are not limited to German universities alone, but the traditional structure of the German university gives them special importance and makes them impossible to overcome by quantitative measures alone. Realisation of the need for structural reform measures has become general, and the "WR Recommendations for the Reform of University Studies" of May, 1966 are based upon clear diagnosis of the situation. They foresee the division of study into:

- basic studies, with a final examination satisfying the academic requirements for professional qualification (for some professions, e.g. medicine, teaching, administration, to be followed by in-service training);
- advanced studies for students having completed their basic studies and interested in, as well as qualified for, research;
- contact studies as a programme for professionals who desire to return to the university either to learn about the latest developments in their field or for a general broadening of knowledge.

For the organisation of studies, the WR recommended:

- an obligatory system of individual counselling in the first phase of studies;
- the formation of small working-groups of students through limiting the number of participants in introductory courses, seminars and similar exercises;
- the development and publication of modern realistic and detailed study plans for every subject;
- the introduction of interim examinations in all subjects after the first half of the study programme (so far this recommendation is closest to being generally realised);
- limitation of subject matter (and, consequently, courses) required for admission to examinations.

1. KONSTANZ

Academic work at Konstanz began with research, and academic teaching has just been introduced; for the 1967-68 winter term, some disciplines did not accept any students. Of the 180 students enrolled for that term (116 male, 64 female), 56 were in sociology, 24 in political science, the remainder in philosophy, psychology, education, history, literature and languages, and six in chemistry as the only scientists (all doctorate candidates). Only students, between their third and seventh semester or in the "additional study" stage (a kind of post-graduate programme) were accepted[1].

In view of the unique opportunities Konstanz seems to offer, the small numbers may be surprising. The explanation is quite simple: Konstanz refused to accept more students than its staff and facilities could accommodate. It is also true, however, that few students were refused. Explanation for the small number of applicants calls for a brief discussion of student mobility.

In the traditional concept of student life the student should pursue his studies at more than one university. In comparison to other countries, the movement of students between universities is still quite strong, though there has been a change in motive. Formerly the student, particularly the more advanced student, would in most cases move to a certain university because of a particularly outstanding professor or department; today the tendency is to spend a year or so at, for example, Munich because of its cultural attraction, Berlin for general political interest, or Freiburg because of its attractive surroundings.

* 1. For the 1968-69 academic year, Konstanz accepted about 300 new students from about 1,000 applicants. Selection was made on the basis of chance, i.e. by drawing lots.

Student mobility has always been encouraged, even by the academic teachers, because it is felt that a change of environment - even when not motivated by specific academic reasons - is a desirable educational experience. Study programmes and examination requirements have always been flexible and/or homogeneous enough to allow for such practice.

Only within the past few years have these conditions begun to change as the study programmes for some disciplines have been more narrowly defined by the individual faculties of the various universities. In the technological disciplines, it is no longer feasible to change before the interim examination after the first four semesters and in other disciplines, too, stricter curricula make it advisable for the student to complete a certain stage of his studies before transferring to another university. The lack of places and the consequent limitation of students admitted present an additional check in certain disciplines, though in comparison to other countries, the opportunity for and rate of student mobility are still rather high.

If a university introduces reforms involving programmes and examinations or even new disciplines and new degrees, then a change into or out of the programme may be a disadvantage for the individual student, especially with respect to time. One of the consequences will probably be a different attitude of the student body towards "their" university. This may result in great homogeneity which could bring an increased student share in the general responsibility for university policy and development, but could also mean the risk of narrowness in outlook and provincialism.

These considerations apply to some of the reforms foreseen at Konstanz. The Konstanz policy-makers are fully aware of the possible consequences, but are pleased rather than concerned about them. While denying any ambition to establish an "elite" university, they nevertheless seem to welcome any factor that might contribute towards making a student body which is and feels different, e.g. a decrease in student mobility and a favourable student-teacher ratio permitting intensive guidance and training of the individual student. Another more technical reason for the relatively small number of applicants in the first year of operation is the fact that only advanced students - in some fields only doctorate candidates - were accepted.

The responsible bodies for the teaching programme at Konstanz are the "Subject Groups" ("Fachbereiche"), i.e. the units of which each of the three faculties is composed. Their organisation and functions were laid down in "preliminary regulations" approved by the "Grosser Senat" in December 1967. They are to establish study plans for each discipline and see to it that course programmes and other activities correspond to the plans and are adapted when necessary to the changing needs of the field; they are also responsible for teaching material, etc.

Decisions within the terms of reference are made by the subject group conference which includes all scientific staff of the various disciplines - from full and guest professors to assistants, lecturers and scientific employees - and as many students as there are chair-holding professors. If the total number rises above 30, the conference may, upon approval of the "Kleiner Senat" be converted into a smaller representative body. The conference must elect a speaker and appoint an executive committee; it may also establish other committees and delegate responsibilities to them. The business of the conference is conducted by a conference secretary, most likely an "Akademischer Rat" or a scientific employee, who is appointed by the rector upon proposal of the conference.

At the beginning and end of each academic year, there will be a full assembly meeting of the subject group, including all teaching staff and all students majoring in the disciplines of the group, plus a representative of those students whose secondary subject is in the group. Its function is to discuss matters of general interest and to advise the subject group conference on such issues.

The subject group is, in these functions, a complete novelty on the German university scene. Its responsibility for the organisation of academic teaching is much greater and more detailed than that of the larger faculties. In comparison to the traditional situation, the large proportion of students and junior scientists (without "Habilitation") is remarkable.

According to present plans, there will eventually be the following subject groups at Konstanz:

- In the Faculty of Science (39 chairs): Physics (6), Mathematics (5), Chemistry (7), Biology (21).
- In the Faculty of Social Sciences (33 chairs): Political Science (5), Psychology (5), Law (5), Sociology (5), Statistics (4), Economics (6), Education (2, plus one in the Humanities Faculty); one additional chair for Geography.
- In the Faculty of Humanities (34 chairs): Literature (10), Languages (8), Philosophy (5), History (10), Education (1).

Guidance and counselling are intensified and institutionalised. The authors of the foundation plan were against the traditional practice, in many fields, for beginners to take the same lecture and sometimes even seminars as the advanced students. They also criticised a feature of student life quite common, at least until a few years ago: the period between semesters (five out of twelve months), officially called "time without lectures", was commonly termed "holidays" by the students and used as such, at least by the younger ones; this could hardly be held against them since, during that time, there are neither lectures nor seminars except for some advanced laboratory courses and field trips. They felt the traditional classification of academic courses into lectures, seminars and exercises or practice no longer corresponded to modern needs. Some of these features are still cherished as parts of "academic freedom", but the feeling that this is a wrong interpretation of the ideal is spreading, and at Konstanz, in particular, an attempt is made to replace them by a carefully planned and co-ordinated system of courses for each level of academic training.

One feature of the traditional practice is the importance of the "main lecture" or "grand lecture" ("grosse Vorlesung") in the programme. Its function is, as defined by the WR in its first recommendations of 1960, to combine a survey of the problems and the solutions so far obtained in a particular field of research, with information on the lecturer's own research methods and results. In practice, however, the latter aspect is often transferred to seminar courses and exercises. Yet the "grand lecture" of perhaps four hours per week is still considered the student's basic fare, even though for some years now the professor's salary has been independent of the number of students registered for his courses. A critic, professor himself, has commented sarcastically that "the German universities behave as if printing had never been invented".

Konstanz plans to reduce lecturing and require the students to do more reading. Main lectures are, to a large extent, to be replaced by

activities of the colloquium type. The university programme for the 1967-68 winter term stated:

> "This preliminary programme must take into account that the character of teaching activities at Konstanz University is still to be developed and tested. In particular, the traditional lecture is to be replaced by a "lecture of new type" ("Vorlesung neuer Art") for which no definite name has yet been determined. This "new type lecture" thus appears in the catalogue under such terms as "Kolleg", lecture course, or just course. Those wishing to participate in any of these courses are expected to familiarise themselves beforehand with a detailed reading list. The course may be conducted in the form of a discussion ("Lehrgespraech") but may also offer other means of student participation (interpretation of texts; research reports; minor research projects). The reading lists may be obtained from the respective subject groups, where information is also available on special requirements or other details concerning seminars and experimentation courses. In all cases special effort will be made to strengthen the relations between professors and students".

In accordance with this general principle, the establishment of a "tutor system" is considered of special importance. With a common aim, intensive individual guidance, the subject groups try different methods. Some assign the tutoring function for a group of students to every member of the teaching staff from "Ordinarius" to assistant, whereas in others certain staff members are appointed as tutors for a certain period and are relieved from other duties.

Obviously such a system can function only with a relatively large teaching staff. But as the Konstanz representatives point out, it is a question not only of numbers, but of full utilisation of all ranks of staff. The "Mittelbau" and assistants are of special importance in the system. They are not only to serve in a subordinate capacity but, according to their ability and experience, to assist in academic teaching. If this principle can be put into efficient practice, it may have considerable importance since the large increase in staff, especially in the "Mittelbau", at other German universities over the past few years has had disappointingly little overall effect upon general efficiency in teaching and guidance.

According to present plans, the science faculty is to have 1,000 students (basic and advanced programme) and 262 academic staff of which 39 are full professors, giving a staff-student ratio of 1:4. For the social sciences faculty, the figures are 165 academic staff with 33 full professors for 1,000 students: ratio 1:6; for the philosophical faculty, 1,000 students, 165 academic staff of which 34 are full professors: ratio 1:6.

For comparison, the total student enrolment at all faculties of mathematics and sciences in Germany for the 1966-67 winter term was 47,539; the total positions for scientific staff were 6,406 with 1,112 for full professors, giving a teacher-student ratio of 1:7.4. In the faculties for economics and social sciences, the national ratio was 1:28 (44,066 students; 1,588 positions, of which 428 for full professors); in the philosophical faculties, it was 1:16 (57,961 students; 3,588 positions, of which 944 for full professors).

It is understandable that the other universities resent the Konstanz plans being held up before them, but it would be unwise to consider them as suited only for a place of luxury. If the average study periods were

reduced to normal at the other universities, the staff-student ratio would already be much more favourable. And such features of the Konstanz plans as advanced reading lists and examination credit for good seminar work do not depend on a luxurious staff-student ratio.

The same applies to the establishment of prescribed study programmes. As has been explained, such programmes already exist in some disciplines (e.g. medicine, technology) and, upon the WR recommendations, are presently being developed for others by individual universities; in order to offer general guidance and to ensure the necessary amount of equality of standards, a joint committee of the KMK and the WRK[1] is drafting "framework regulations for study programmes and examination requirements". As an overall pattern, however, Konstanz is likely to be the first to develop and practice it. "Preliminary study regulations" have been drafted and prescribe a rather full programme for the first semesters; as the student advances, he is left with more opportunity for individual choice, and during the last semesters before the "Magister" examination he is relatively free to decide his own programme.

The aim within the academic programme is more coherence and co-ordination. Lectures are to be supplemented by seminars and practical exercises on the same or a related subject. Such formal divisions as for example in chemistry, several semesters of inorganic followed by several semesters of organic are to be replaced by a step-by-step programme that corresponds better to the overall structure of the science of chemistry. The main "praktica" ("experimentation courses in science") will be organised as full-day courses, so-called "Kompakt-Praktika", to avoid the frequent situation in the traditional system where a student works on different "Praktika", perhaps in different fields, on the same day. In the "compact courses", several scientists representing different fields of specialisation may collaborate to introduce the students to the various scientific aspects of a particular problem.

Curricula and lecture programmes for each semester are set up by the subject group as a body. In the traditional system, it was left largely to the individual professor to decide what lectures he would give, and there was the risk that a student might not be able to pursue his studies systematically. The Konstanz plan is expected to assure co-ordination and long-range planning in student studies, thus eliminating this risk. It is also expected to prove especially valuable to the advanced student, because it provides opportunity for what is possible only in exceptional cases at the overcrowded traditional universities with loosely organised programmes, that is, the full introduction to, and participation in, research work.

Long-range plans include a "contact study programme" as suggested by the WR, but this will probably not be immediately developed.

The degree of "Magister" will be awarded by all Konstanz faculties. This, in itself, is an innovation, since the degree was introduced to the modern German university system only a few years ago and is so far awarded only at same universities and by a small number of faculties, usually those of philosophy and humanities. At Konstanz, however, by university regulation it is to be the general final degree at the end of the basic study programme ("Grundstudium"). The examination is taken either in two major subjects or in one major and two minor; in either

1. KMK ("Kultusministerkonferenz"): Permanent Conference of the Ministers of Education and Cultural Affairs of the Laender of the Federal Republic of Germany; WRK ("Westdeutsche Rektorenkonferenz"): West German Conference of University Rectors.

case, a thesis is to be written in one major subject. Whereas traditional examination regulations usually have complex requirements of subject combinations, the candidate for the Konstanz "Magister" is rather free in choosing his subjects. The only condition is that the student plans and pursues his studies coherently and in not too narrow a specialisation. Thus, a combination of subjects from different faculties is possible. The thesis and examination are to prove that the student has a sound knowledge of his subject and is able to use scientific methods and techniques of academic work.

A special provision of practical importance and policy significance is that students studying to become Gymnasium teachers must, as at all universities, take the "first state examination"; at Konstanz, however, this examination can at the same time earn for the student the academic degree of "Magister". There is a legal problem involved since the state examination committee cannot award academic degrees. These committees, however, presided over by a representative of the Education Ministry, always include members of the university teaching staff who administer in large part the examination and decide on the academic title. Besides the advantage for the student, the Konstanz procedure is also expected to reduce the work load of the examiners.

The long-range effects of this procedure on the value of the qualifications thus obtained are, however, as yet unkown. The main reasons for introducing the "Magister" in Germany were that a large majority of students in the humanities were preparing for the first state examinations; even if they did not intend to become Gymnasium teachers (but hoped for a career in the university, in journalism; etc.) they would take the examination just to have some certification of achievement and if their ambition should fail, they could still take the two years of practical training, the second state examination, and become teachers with the status of civil servants. In order to qualify for the first state examination, however, they often had to take courses and subject combinations which did not interest them. If they did not compromise but preferred to take the risk, then the only academic honour possible for them was the doctorate since an equivalent to the "Diplom" in science, economics and technology, i.e. an academic degree below the doctorate, did not exist in the humanities. This often meant frustration, either because a student left the university after many years of good work without having anything to show for it, or because he decided to spend more years desperately struggling for a doctorate. The "Magister" was introduced to improve the situation. If the Konstanz system, however, should award to every "Studienrat" (Gymnasium teacher) an "MA", the result could be that the "MA only", i.e. without first state examination, might lose the relatively little prestige it has so far gained.

In study duration, too, the Konstanz regulations present an interesting compromise between elasticity and compulsion. As a rule, the "Magister" examination must be taken at the end of the eight semester. Exceptions, whether earlier or later, must be approved by the examination committee. Thus, the exceptionally good student may be admitted earlier, whereas postponement will be granted only for valid reasons.

Contrary to the general practice in examination regulations, the required study period includes the examination itself, which means that the examination is completed at the end of the eighth semester (normally, several months of "examination period" are added to the minimum number of semesters specified in the regulations - not to mention the fact that in many fields with large student numbers the actual study period exceeds the required minimum by an average of 3-4 semesters). The Konstanz

regulations suggest that the thesis be based on a seminar paper or completed in conjunction with an advanced seminar, whereas the usual practice is to assign the student a new topic for his thesis, with a certain amount of time to complete it. The degree to which the topic was related to previous seminar work depended much on the student's rapport with his professor.

Furthermore, especially good performances during the regular course of study will be considered in the examination and may even be taken in lieu of certain parts of it, and the candidate may in each subject choose one examiner from the university staff. Both these regulations seem to be of great psychological importance for the student as well as in the interest of objective judgement of his overall performance.

Traditionally, the students in some faculties (e.g. humanities, law, economics) studied for five years or more before taking their first, and often last, examination. Under pressure of public opinion and in light of the 1966 WR recommendations, the practice of interim examinations is slowly gaining ground. At Konstanz, they are an essential part of the programme in all fields. The founding committee even suggested the introduction of another degree, the "Baccalaureus", to be conferred in the science faculty upon passing the traditional "Vordiplom" ("Pre-diploma") examination after the sixth semester. The issue has not yet been decided, but opinion seems not to favour it since the "Vordiplom" does not by definition certify completion of an academic programme.

Qualified students having completed their basic study programme and obtained the "Magister" degree can be admitted to the second stage of studies, the "Aufbaustudium" (advanced studies). This term may comprise two quite different programmes:

- a post-graduate programme in the fields previously studied;
- supplementary or complementary studies in a different field.

Of these, the first in principle corresponds to the practice at other universities, though the WR recommendations for a clear-cut division into a four-year basic studies programme and an advanced programme only for the specially qualified students have not yet been carried out. The second type of programme may in principle be pursued in the traditional system, too, but only by "beginning all over again", i.e. entering another regular student programme in the first semester.

The Konstanz idea is that, for instance, a student with a first degree in law who wants to study sociology will already possess certain qualifications that the normal first-semester student of sociology does not have. Konstanz will not have, at least for the time being, a faculty of law but nevertheless trains law graduates in advanced studies. If one considered the degree to which training in law is related to and regulated by the state, this is almost a revolutionary feature.

In November 1967, the Baden-Würtemberg Land Government approved the advanced studies programme for law graduates. They will have taken their first degree (state examination) elsewhere, then at Konstanz they can take an advanced degree as "Lizentiat" (a new degree) or a doctorate. The Land Government also decided that law students can be admitted at Konstanz before their first examination, though for some time a full regular programme will not be possible for them. Whereas the Government would like to have a full Law faculty established sooner or later, the University is not in favour of the idea. There is a latent conflict here between the state interest in training capacity and the university's interest in its original concept.

Only students who are specially qualified will be admitted to the advanced study programme, the main criterion being - besides the requirement of "Magister" or equivalent degree - the ability to do independent scientific work. While no detailed procedure has yet been established, there is general agreement that qualification should not be measured solely by the marks received in the "Magister" examination, and that students from other universities should also be accepted. It is assumed, and hoped, that of the Konstanz "Magisters" only 20-25% will apply for the advanced programme.

The advanced study programme may be completed with an oral examination to obtain the degree of "Lizentiat", i.e. a new degree which certifies completion of advanced studies beyond the "Magister" level, so far certified only by the doctorate. Furthermore, the Konstanz reformers hope it will also be acknowledged as partial fulfilment of post-diploma or post-magister training required for certain professional careers, especially for law students. This must be viewed in the light of the special importance of law studies in Germany. It is the classical academic preparation not only for legal professions, but also for a civil service career in public administration or the foreign service. Whether he wants to be administrator, judge or lawyer, the law student will have to take two state examinations - the first after seven-eight semesters of university studies, the second after another two and a half years of in-service training at various courts and administration offices. During this trainee period, he is a member of the civil service and receives a subsistance allowance. After the second examination, he may stay in the civil service (national, state or municipal administration; justice) or enter a private career (lawyer; industry). By defining the examination requirements, e.g. a catalogue of basic topics to be covered in lectures and seminars, the state examination boards exercise considerable influence upon the study programme.

Referring to a similar recommendation of the WR, the authors of the Konstanz plans express the hope that the period will be shortened for those who took an advanced course and passed the "Lizentiat" examination. So far, however, this is a vague hope against firmly established regulations for civil service careers.

Finally, the "Lizentiat" will also be taken as partial fulfilment of the doctorate. In most present "promotion regulations" (Promotionsordnungen) governing the awarding of the doctorate, the procedure for this degree is without relation to other degrees or examinations. Only in some disciplines (law, medicine), having passed the first state examination is a condition for being admitted as a doctorate candidate. There is nowhere a regulated step-by-step "doctorate programme", but the student will try to distinguish himself sufficiently to be accepted by a professor, who will sponsor his work on a dissertation as his "Doktorvater" (doctorate father). From this time, no formal step can be taken or partial requirement met until the dissertation has been completed and accepted by the faculty. For the oral examination, advanced studies in certain major and minor subjects are requested but the definitions of "subject" and the combinations from which to choose, as well as the level of requirements in each, are often different from those for the state examinations. In many cases the dissertation may require years of research or a time-consuming series of scientific experiments, and the candidate may have left the university and begun a professional career long before finishing the thesis. Even if he continued to work full-time on it, he may well have forgotten a good deal of the general scholastic matter outside the narrow limits of his thesis work, and he will find it

difficult and time-consuming to refreshen his former knowledge over the breadth of subjects required for the oral examination for the doctorate.

In view of this situation, the Konstanz plan of accepting the "Lizentiat" in lieu of the oral examination for the doctorate is of considerable practical importance. With the orals out of the way, the candidate may concentrate on his thesis either at the university or in his profession; he may even enter the profession without planning to obtain the doctorate, but then be stimulated to write a dissertation by his professional work.

It will, of course, also be possible to obtain the doctorate in the normal way, i.e. by submitting a dissertation and taking the oral examination without the "Lizentiat" examination and even without advanced studies.

Another detail of the requirements for the doctorate at Konstanz reflects a typical feature of modern research. Traditional regulations require that the dissertation be solely the author's work which make it very difficult to consider a candidate's share in an important piece of team-work research. For Konstanz, such work is expressly admitted, provided the candidate identifies clearly his original contribution.

Doctorate regulations usually specify that the candidate must have studied for a certain period of time and/or taken previous examinations at the same university which is to award the doctorate; exceptions must be specially approved. The Konstanz regulations do not mention such conditions. It will be left to the individual professors to determine which candidates will be accepted for presentation to the faculty for "promotion".

Viewed as a whole, the Konstanz system of study programmes and examination regulations implies, on the one hand, considerable limitations upon the "freedom of studies" aspect of traditional academic freedom by subjecting the student to a much more stringent system of prescribed curricula and study control (even if such regulations have long since been in effect and considered useful in other countries). On the other hand, the Konstanz system is in many ways more flexible and liberal for the individual student than the traditional ones because it gives greater choice in the combination of subjects and in the way requirements for the "Magister", and especially for the doctorate, can be met.

"Liberalisation of requirements" should not, however, be understood as "lowering of requirements". It may well be argued that granting two qualifications upon one thesis and one examination ("Magister" and first state examination) means a lowering of standards in comparison with separate procedures for each. Perhaps one might also say it is desirable that a young scientist applying for a doctorate several years after termination of his regular studies be requested to "brush up" his general knowledge of his field. We share the Konstanz doubts, however, as to the justification of these arguments and to the absolute and objective value of examinations as such. A student required to present two different theses about the same time will probably not be able to demonstrate his full ability in either; and a candidate for a doctorate several years past his regular studies is likely to refreshen his memory of the general subject matter just long enough to take the "orals". The Konstanz system seems to avoid superficial cramming; it provides for a systematic organisation of studies and offers a coherent and flexible programme of advanced studies for those who are qualified.

Some questions must be answered by experience: Will the Konstanz system be accepted by those on whom the graduate depends, i.e. mainly state and industry ? Will, for instance, the "Magister" title gain a firm standing, whether with or without the state examination certificate ?

Will the state be prepared to reduce the practical training period for those who take advanced studies and/or give them better opportunities of promotion ? Will the new degree of "Lizentiat" be acknowledged socially and professionally, or will - to take an often quoted example - the chemical industry continue to insist on the doctorate for any promising position, forcing the student to spend several years on his dissertation not so much in the interest of science as in that of his later career and the prestige of the firm ? Much will depend on the quality of the first graduates, but also on the extent to which general discussion of these issues contributes to overcome traditional prejudices and the strong reliance of public and private employers on formal qualifications. Konstanz is only one example, though the most striking one, of a number of universities beginning to develop new study and examination regulations.

2. AACHEN

Again we must refer to the previous section, where the new ideas for medical student training have already been mentioned. The main feature was emphasis on early and intensive bedside teaching, the lack of which, before the internship years, is considered the main shortcoming in medical training in Germany. At Aachen, students in their clinical semesters, i.e. the second stage of study, spend four afternoons each week visiting the wards[1]. The faculty hopes to be able to continue this practice even when the final stage of development (600 clinical semester students, 1,300 beds) has been reached; in the 1967-68 winter term, there were only 32 students in that stage, while the various clinics of the former municipal hospital have 1,150 beds.

Another interesting feature, though as a principle not completely new, is the so-called "ring lectures" which are given in addition to the normal lecture programme. In the "ring lectures", a particular subject of medical science is treated by specialists of several disciplines; one example is a series of lectures and discussions on the kidney, held jointly by pathologists, surgeons and specialists of internal medicine.

For the first stage of study in medicine, no special experience is available yet, since the first group of students (third semester only) will not be accepted until the 1968-69 winter term.

Similar to recent developments at other universities and following the policy initiated by the WR recommendations on study reform, a compulsory interim examination at the end of the fourth or fifth semester has been introduced in the philosophy faculty.

Another feature of general interest developed at Aachen and since copied in other universities is the establishment of a "Studienkolleg" (preparatory college) for foreign students. With 2,000 foreign students from 73 countries, the proportion of foreign students (20%) is about twice the average of other universities. The state has officially established a "Studienkolleg" for the purpose of aiding these students who often do not possess the necessary knowledge of the German language or of the basic subject matter required for the academic programme. The final examination is the responsibility of the state, with a government official as chairman as in the "Abitur" or university state examinations; it leads to qualification for a particular field of study. The general introduction

* 1. In the course of 1968, similar plans have been developed for medical training at other universities as well. It is foreseen to assign a number of municipal hospitals to each university for that purpose, since the university hospitals alone would not be sufficient.

of the "Studienkolleg" system has greatly improved the study efficiency and success quota of foreign students, especially those from developing countries. Attendance is, of course, not required for students sufficiently qualified or for those who come for only a short period of study.

3. BOCHUM

Aside from the principle of close inter-disciplinary contacts in research and teaching which has led to the special organisational structure of the university (cf. Sections C, E and G), Bochum does not present any striking innovation in teaching methods and teacher-student relations. This does not mean, however, that the disadvantages of the traditional system (emphasis on main lecture courses, lack of guidance and individual or small group tutoring, lack of co-ordination between different parts of the academic programme, "remoteness" of staff) are simply continuing, but rather that the pragmatic steps taken at Bochum correspond to a general development on the German university scene. The Bochum policy seems to be to intensify these features and develop them further without proclaiming more radical changes such as envisaged at Konstanz. The principles laid down in the foundation programme and reflected in the organisation, the campus character of the university, the pioneer spirit of the first generation of students and staff, and the favourable teacher-student ratio of the initial semesters may be more important than special new techniques and programmes would be, and they may also go far in creating an atmosphere that will continue until the time when Bochum, too, is overcrowded.

The main features of the general programme to improve academic teaching and teacher-student contacts in the German universities have been mentioned elsewhere and need only be recalled here: expansion of staff, especially at the "Mittelbau" and assistant levels; the organisation of introductory courses, guidance and tutoring groups; the co-ordination of lecture courses with discussion groups for preparation and evaluation; the setting up of detailed study programmes and examination requirements for interim and final examinations, and improvement of the mechanism to assure a corresponding organisation of courses; the introduction of team teaching; improvements in the library system.

For each of these measures, Bochum's degree of evolution will probably be equalled by one of the traditional universities, but it may well be that the quantitative addition of the various changes will make for a qualitative difference.

As an example, one may take the 1967-68 winter term programme in the mathematics department with about 300 students. The course Analysis I (four units per week) is supplemented by two-unit exercises in ten different groups to be conducted by assistants; a similar system is employed for Analysis III and for Linear Algebra and Geometry I. All other lectures (numerical mathematics, function theory I, mathematical statistics I, theory of programming I, partial differential equations, function analysis) with two to four weekly units are supplemented by a two-unit exercise held by the same professor. The last entry is a series of "Kolloquia" to be held jointly by six professors. Each professor also holds a "proseminar", i.e. an introductory exercise. In other departments, including the humanities, courses are designated as belonging either to the basic study course or to the advanced course, seminar courses are subdivided into several groups, and the number of introductory courses and exercises is especially large. Many of these courses are given by members of the "Mittelbau" staff.

An establishment of special interest is the "Studienbüro" or general student counselling office; the part-time staff ("opening hours daily 12-13 and by appointment") includes two psychologists and one doctor of medicine. The office is to assist students through study and career counselling as well as counselling in personal problems. According to the chairman of the advisory board, a professor of psychology, it has already proved extremely helpful and important to the students and, indirectly, to the university as a whole.

The construction programme, when completed, will provide about 30 student houses with rooms for about 4,000 students. So far, about 2,000 places have been completed and are occupied, but due to lack of space the rooms for special activities (e.g. club rooms) have temporarily been occupied by other university offices waiting for their proper quarters to be completed. Though a small number of apartments for married couples are available, the plans do not foresee promoting staff-student relations by providing living quarters for staff in student houses.

I. ROLE AND STATUS OF STUDENTS IN THE ACADEMIC COMMUNITY

Since almost all student organisations, including the "Allgemeine Studentenausschüsse" (ASTA, the executive student body of each university) have taken up from more radical forerunners the demand for a greater share of student influence in university self-government, it has become one of the main issues of university reform. Though the situation differs in detail between universities, as a rule student participation in academic self-administration is limited to one or two students attending Senate meetings and being entitled to participate in debates concerning "student affairs", with the Rector or Senate members deciding if and when this is the case.

The main tenor of the demands today is the "one-third principle", that is, all academic collegiate bodies are to be formed by an equal number of representatives from the following three groups:

- full professors;
- "Mittelbau" and assistants;
- students.

Any suggestion to limit student representation or to make it dependant upon the question to be discussed is refuted by the student spokesmen. The "one-third principle" has become a focal point of student unrest which has broken out at several universities in the last two years, sometimes flaring into violence. Though the real reasons and motives for these phenomena may well lie outside the academic sphere, it seems that the apparent immobility of the university structure and the conservative attitude of many university representatives provoked and attracted latent unrest and vague dissatisfaction with the present university as well as the present world.

A complicated process of action and reaction has been set in motion, and it will for some time be impossible to assess the results. On the one hand, most universities are making provisions to give the student body stronger representation in the academic government; perhaps even more important in the long run, they are intensifying their endeavours to improve study conditions by revising curricula and examination requirements, improving the guidance system and generally implementing the WR recommendations for study reform. On the other hand, however, spectacular actions of radical student groups have caused a noticeable swing of public opinion - "establishment" as well as "man in the street" - from support for the students' demand for university reform to a call for "strong measures" against irresponsible revolutionaries that disturb the peace and insult professors. To make matters more complicated, study reform in the sense of control and efficiency is just what the intellectual "utopian socialist" leaders of the radical minority do not want;

they denounce it as violation of academic and human liberty, reducing man to a smoothly functioning cogwheel.

It is interesting to observe that during the months of spreading unrest the technical universities remained calm. The students there find study conditions normal, and a relatively strict programme for each discipline is long established practice. Study duration had tended to increase, too, but with the recession in industry it went down again: as lucrative "side jobs" became scarce, the students concentrated more on their studies. The expansion of Aachen into a full university brought with it some interesting features of innovation in self-government for the medical faculty, but not with regard to greater student participation. At present, the university plans to change its constitution to give the right of vote to the two student representatives in the senate and inner faculty.

At Bochum, the only important difference in the original constitution concerns the "Studentenwerk", the student welfare bureau which disposes of considerable national funds at every university. The "Studentenwerk" may arrange free health cures for students, dispose of special stipends, issue free meal tickets and supervise the student dining hall. It is usually run by full-time staff and governed by a joint student-faculty body. At Bochum, it has been turned over completely to the students' responsibility, subject of course to the regular control by public accountants compulsory for all agencies disposing of public funds.

With regard to student participation in the various organs of academic self-government, Bochum followed the established course, with the result that, as elsewhere, modifications to meet reasonable student demands are at present under consideration.

At Konstanz student members are so small as to make any riot unlikely. To the critical observer, this seems a great pity; it would have been most interesting to see how a full student body of 3,000 - including 1,000 social scientists, evidently the most active group anywhere - would have acted, because Konstanz has gone much further in meeting possible demands than any other university. Students are participating in the work of almost all academic organs and committees.

In the "Grosser Senat", the classic university parliament, two student representatives have full votes in all matters, including appointments of professors. There seems to be general agreement in the university that the number of students in the Senate should be increased (in the course of a general re-organisation of the Senate), but that cannot be done without formal decision of the Land Cabinet to alter the "Preliminary Constitution of the University of Konstanz" which it issued only a short time ago. For the time being, the Senate has decided to admit two more students without vote.

The Preliminary Constitution does not foresee representation of students (nor of assistants) in the "Kleiner Senat", as is the usual practice at most universities. Upon invitation of the Senate, however, the president of the student body and one assistant regularly attend all meetings. Their votes cannot be counted in formal voting, but any decision based on a vote which would have been defeated if the two votes had been counted is not carried out. Perhaps this is an advisable procedure not only to avoid a conflict with the present constitution, but to allow student representatives to cast their vote more freely than if they had the full right to vote which also means the occasional need to compromise.

In the Faculty Assemblies, which in Konstanz almost exclusively deal with appointments and "Habilitations", the two student representatives have a vote. In the Subject Group Conference, the main authority for matters concerning the acedemic programme, the students have as many representatives with full voting rights as there are full professors holding a chair in the specific group and if there are less than three chairs, there will be at least three student members. This goes far beyond the small proportion of students in the corresponding bodies of other universities, and in view of the importance of these bodies in determining the academic programme the Konstanz practice may well be termed revolutionary.

It is common practice of the University Senate to set up small Committees for efficient work on various issues. Most of these committees at Konstanz have one or two student members, whose number corresponds to that of other groups of university members. The Committee for Student Affairs has three student members, one of them serving as vice chairman.

From the short period of experience, student participation is generally considered an asset by university representatives. They have made some valuable suggestions, and they have developed a sense of responsibility for the university as a whole which has contributed to a general atmosphere of mutual confidence between university administration and students even if some decisions had to be taken that were not popular with the latter. An essential condition for this atmosphere is probably the fact that student participation was requested by the university without any outside pressure.

The housing programme, which foresees a kind of campus for about one-third of the students (in dormitories) and part of the academic staff, is expected to promote student-staff relations. A block of 350 single rooms for students has already been completed, but is presently serving as quarters for several university institutions. A second block has just been begun.

With regard to scholarships and other programmes of student support, Konstanz is in the same position as other universities. An attempt to get special stipends for qualified students in the advanced studies programme from the Land has failed.

J. HIGHER EDUCATION AND THE OUTSIDE WORLD

In the general background chapter and on various occasions in this chapter the need for the German university to re-consider, or to become more aware of, its function and position in the social and political world has been commented upon. Those remarks applied to the issues of "democratisation" within the autonomous university, of fully acknowledging the social service function with regard to training professional manpower of high quality in large numbers and not only future university scientists, and to the need for improving relations between university and state in the interest of a co-ordinated, effective science policy as *part of an integrated social policy*.

These points are recalled here to avoid possible misinterpretation. They must, first, be seen within the general framework, i.e. German universities are state establishments, financed by the state, staffed with civil servants, run according to constitutions approved by the state, attended by students that must be admitted upon presentation of a certificate issued by the state (unless that state permits restriction of admission as an emergency measure) and in great numbers preparing for state examinations. The main student scholarship programme (about 20% of total student population) is paid from public funds upon criteria formally established by state authorities and applying to all universities. These comments are not made to detract from the validity and significance of the above criticisms, but to point out that they must be viewed in a different light than if the same remarks were made about another type of university in a different system.

Secondly, the criticisms do not apply to the relations between university and society with regard to co-operation in scientific work. The competition to have as many professors as possible on their advisory boards or as assembly speakers between all types of organisations, from political parties to interior decorators, may be an amusing sidelight rather than a valid indicator. What seems more important is the high and increasing degree to which university professors in a wide range of disciplines are called upon by public and private parties for expert opinions, consultation, and special research assignments, a development which again is viewed with increasing concern since it tends to lead to neglecting the regular academic functions.

Finally, co-operation between industry and university, the technical universities in particular, has always been strong and mutually beneficial; again, the concern sometimes is that certain specialists and institutes at a technical university are alienated from their academic functions by too much industry-directed work. At the same time, there is an effective exchange at the top level, experienced industrial scientists accepting a chair or part-time duties of "honorary professor" and academic staff transferring to industry.

There is no doubt that Bochum in its strategic location will soon establish these ties with the Ruhr area industry. Also, it will stress the aspects of this region in such disciplines as regional planning, cultural anthropology, social psychology, industrial sociology, etc. In a similar way, the Konstanz Centre for Educational Research is carrying out a large project of policy importance for the Land government. In the near future, the university intends to establish an office for the Lake Constance region ("Büro für Bodenseefragen" is the preliminary working title; even the word "Institut" seems to be taboo at Konstanz). The office is to initiate and co-ordinate research and planning over a wide range of questions that are of general importance for this region which lies off the main trans-European line of traffic and has very little industry. It is hoped that the institute will contribute to a co-ordinated international development policy (Austria and Switzerland are bordering on the Lake as well).

In both new universities, community and industry first exercised all the influence possible to obtain the university, and then have continued to treat it as a prestige establishment of considerable economic importance (cf. the arguments for the location of the Ruhr University in Chapter I).

In both cases, the Society of Friends of the University whose members are the leading local personalities has been established, though in neither has it attained greater importance for university policy or financing than in the other universities. This seems a little disappointing, especially at Konstanz where, already in the planning stage, close contacts with the municipal administration were established. One has the impression that the founding committee was so absorbed by internal university reform that it neglected the opportunity for establishing new links with the greater social and economic organism around it. Since January 1968 however, the university has been giving a series of lectures to which the public is invited, and the programme has already met with great interest in the community.

Konstanz is a relatively small town and has little industry, and the university has only science, not technology, so there is little opportunity for the type of industry-university contacts that Bochum can expect. On the other hand, the small size of the town and the fact that the university is geographically more integrated into it than the Ruhr University into Bochum offer possibility for closer social integration. A number of professors are already active on the local and regional scene. And there is, after all, a large industrial firm which has a branch at Konstanz and plans now to enlarge it considerably.

At Bochum, too, initial hopes raised by the Society of Friends have been somewhat deflated. The Society's most ambitious project was to present the university with a guest house, a kind of hotel-club combination. For various reasons, the project has not materialised; the university is now trying to obtain the funds for a guest house from the Volkswagen Foundation, which several years ago established such houses at most German universities. For the guest professor programmes, etc., such an establishment is not just a social asset but of great importance in view of the general housing shortage.

The establishment of the university will lead to the creation of a completely new suburb at Bochum, too, but farther away from the city proper than at Konstanz. Already the professors, living in a new housing development by themselves, complain of isolation and lack of contact. The community centre club, on the other hand, is little frequented.

Neither at the new universities nor at any of the older ones is there a programme comparable to the university extension programmes or adult education courses in other countries. Though the need for something like the "Contact Study" programme recommended by the WR is generally acknowledged, the universities evidently are too busy with the growing crowds of regular students. Educational Television ("Tele-Kolleg" in Bayern) has so far concentrated on courses below university level, and an institute for academic-level correspondance courses is still engaged in experimental work.

Neither of the new universities has, furthermore, ventured to attempt basically new ways of integrating public interest into the organs of academic self-administration. In the course of 1968, the voices advocating such integration have become stronger and more numerous. Several Land university bills put before the parliaments in the course of the year provide for such integration at two levels: by "outside members" (industry, public life) on a new type of council ("Kuratorium") for the individual university, and by the same kind of members on a special Higher Education Council for all universities or all institutions of high education of one Land.

K. EVALUATION AND PLANNING

The question of evaluation and planning for German universities must again be viewed in the general context of their legal and administrative status; since they are state establishments depending on annual state budgets and bound to state regulations for a large part of their study programmes, examinations, admissions and staff positions, there is somewhat less scope for the planning and development of individual university policy.

On the other hand, within the general framework thus set, the autonomous status of the individual universities and even more so the status and prestige of the national university and science organisations (WR, DFG, WRK, Max-Planck-Gesellschaft) give to the "university level" as a whole a great amount of influence and independence in university development beyond the financial and legal aspects. State policy in this field has taken two directions in recent years: first, to strengthen the position of the above organisations (especially the WR which was created by Bund and Laender for policy development and co-ordination) to assure efficient policy at the national level without unacceptable direct political pressure on individual universities; secondly, to reinforce the Laender governments' position for policy initiative through the establishment of a policy and planning division in the Land Ministries of Education. In fact, the general potential for planning beyond the individual university level seems sufficient, though its structure has led to a problem of co-ordination between the various agencies at the Laender and national levels. In February, 1968, for instance, the Baden-Würtemberg Minister of Education announced his intention to introduce the trimester system at the university, while the president of the WRK publicly advocated the "study year" system (with only one long vacation period instead of the present two) and was supported by the Nordrhein-Westfalen Ministry. Or, some time ago science and the university were unanimous in advocating a decrease of the study period required for pharmacists but the Federal Health Ministry, which governs the admission-to-practice regulations for pharmacists and medical professions, added one semester instead.

Once these general conditions for planning in the individual university are realised, the picture must be balanced by recalling the strong position of the individual units within the university, especially the faculties and institutes. Rector, senate and senate commissions have great influence on constitutional questions, the building programme presented to the state, etc., but as for the scientific policy of the university (research, study programmes), each faculty is a senate and every institute director a king. There is a growing need for co-ordination at the university level as well as nationally - development of "strong points", inter-disciplinary co-ordination, balance between university and extra-university research. The introduction of many reform measures, not to mention their success, depends more on the attitude of the faculty

and institute than on a decision of a national body, the Land government, or the university senate.

For the three universities here under consideration, the initial planning functions have been fulfilled by the founding committees (with regard to the structural principles) and in co-operation with the state and university agencies (Education and Public Works Ministries; senate; joint state-university construction committees). For continued evaluation and planning, the basic responsibility will lie with the bodies responsible for general university policy, as in other universities. It is obvious that the Konstanz rector, in his unlimited period of office, will have a stronger position than his one- or two-year colleagues. The university research committee will perhaps be of even greater importance with regard to co-ordinated research policy.

At Aachen, the senate has set up a committee on the university structure whose assignment has been defined as "thinking about what the university of the future should look like". Of course, at any other university similar bodies are discussing similar questions, but the setting up of a committee with this specific assignment seems of some significance, and given the "Aachen spirit" of combining pragmatic common sense with bold imagination and the understanding of modern scientific possibilities, the result may well prove interesting and important.

With respect to organisation, however, a recent Bochum plan is more interesting as a new feature on the German university scene. Under the leadership of a young rector, who is also the president of the Nordrhein-Westfalen Land Conference of University Rectors, the university proposes to set up a small office for the special purpose of evaluation and planning. Since this is not foreseen in the state budget, the university has applied to the Volkswagen Foundation for financial support.

A similar application has recently been submitted to the Foundation by Konstanz University. The final decision is not yet known, but the Foundation has already expressed its general opinion that it would work out a project for a central, independent office that would collect data and develop analyses and criteria for co-ordinated university planning on a national scale. As a second stage, that centre might establish regional field offices[1]. In the meantime, the Bochum rector has assigned two full-time assistants with certain preparatory planning studies. Almost all universities, whether new or old, are trying to determine their future space and staff needs as a basis for policy decisions and requests for funds to the Land Ministry. With the recent increase in student numbers, such calculations have become of increasing importance. At the Bund and Laender levels, several committees and offices are attempting to calculate future student numbers and the future need of society for graduates in the various fields; planning sections in the Ministries and university committees are trying to establish criteria by which to measure the training capacity of a university, either as a basis for expansion programmes or in order to judge an application for "numerus clausus" by a certain university[2].

* 1. By the end of 1968, that plan had reached the stage of detailed organisational preparation.

* 2. In the course of 1968, the WR recommendations on quantitative criteria for university training capacity have been followed in the Nordrhein-Westfalen Education Ministry's Advisory Council on Higher Education's "Recommendations I", which - based upon a calculation of study beginners and of future manpower needs - makes detailed suggestions as to quantitative and qualitative development of the higher education institutions of the Land until 1975.

L. COST AND FINANCING

For new universities, this heading calls for consideration of capital expenditure for the original construction as well as permanent operational expenses for material, equipment and personnel. As for the question about the source of funds, the answer can be brief: public funds, made available in annual state budgets with certain possibilities for carry-over. Additional funds, mainly for research, will be obtained in the usual way from national science organisations (notably the German Research Association), the Federal Government (especially for "crash programme" disciplines) and industry. As for current expenditure, the situation will also be about the same as at other universities, but certain features of construction and structure will also influence cost efficiency (central purchasing office; joint use of facilities). In view of the great and increasing problems that the Laender are facing with regard to university financing - current expenditure even more than investment - this can become of special importance. Experience of the last decade shows annual current expenditure (including personnel), generated by an investment to be about 15-25% and in some disciplines as much as 30 of the original capital investment. In other words, the cost of operating a university institution for about five years is as high as the cost of building and equipping such an institution. Thus the high capital investment rates in higher education in recent years have led to annual demands that put an almost unbearable strain on some Laender budgets. This is one factor that must be taken into account when considering the Laender attitude towards the plans for an increased federal share in financing investment in higher education. The laender are pressing for increased federal support but, on the one hand, they would like the conditions to be such as to relieve them of investment obligations for the benefit of current expenditure funds and, on the other, they are interested in matching the federal funds for investment in order to safeguard their policy control. The general policy situation with regard to Bund-Laender relationships on this issue, including the proposal for a change of the federal constitution at present before parliament, is outlined in the general background chapter. Quite aside from the above problems, which relate to the university as a whole, the main point of interest under the heading of this section and with regard to the universities under review is the cost factor in original construction and equipment and the effects upon it of new techniques and methods, or the consequence of structural innovations upon the architectural design. Both new universities offer some interesting examples in this respect.

For Konstanz, the first government calculations in 1963 were based on the assumption that the three faculties of the university would have the traditional structure, notably separate institutes. On this basis, the total amount of space required was estimated at 160,000 square metres (science: 85,000; social sciences: 10,000; philosophy: 20,000; central facilities: 45,000), the total cost for ground development and construction at DM 345 million.

The foundation committee adhered to the government concept with regard to the number of faculties, staff and students, but devised a new university structure which included abolition of the traditional institute, common service facilities (including laboratories and workshops), concentration of lecture rooms, etc. As a consequence, the space could, without any loss of effectiveness, be reduced to about 90,000 square metres. The greatest saving was in science (34,300 instead of 85,000; social sciences 14,700; philosophy 13,900; central facilities 21,000). A new addition is space for research centres and research groups (6,000). The individual figures for other items are not strictly comparable to the original ones, since now only part of the library facilities are "central facilities", the space for the subject group libraries being counted with the faculty in consequence of a new architectural concept (cf. page 74). With regard to cost, the result is that, despite a general price increase since 1963, costs are now estimated at DM 250 million (including 30 million for development) instead of the original DM 345 million[1].

This obviously means a considerable saving in furniture and basic equipment. Another principle is that of standardising equipment in the interest of rationalisation and economy. With regard to costly apparatus, the structural innovations have already proved an important factor of economy. All such apparatus is under the authority of the university's technical director, whose responsibility covers not only purchase and technical supervision, but also utilisation. The apparatus is not, as at other universities, assigned to a special professor, but remains at the disposal of every interested scientist. If demand exceeds capacity, the technical director decides on the purchase of another of the same type. One illustration, which may not be as extreme as an outside observer of the traditional system is likely to think, is that Konstanz has two pieces of a costly apparatus (price about DM 250,000) of which the same groups of scientists organised on the basis of the institute principle would probably need eight.

In the field of current expenditure, the Konstanz system also allows, if not for savings, certainly for greater flexibility and cost effectiveness. In the traditional system, the institute budget (personnel, material and equipment) would largely depend on the professor's bargaining position and skill in his negotiations with the Land Ministry upon accepting or refusing a call. The amount thus fixed was likely to remain unaltered until a new round upon a similar occasion. As has already been explained, the prospective Konstanz professor negotiates only some details of his personal status and salary with the Ministry, all other funds being under direct authority of the university. The university will not make any long-term commitments beyond a certain maximum of personnel and equipment, except for the promise that it will do its best to assure that the need for personnel and material is provided for within the overall university budget. Thus the university is free to adjust its allocation to changing needs. In connection with the function of the research commission, to which annual progress reports are submitted, the system seems to offer real possibilities for efficient university policy.

So far, only the first set of buildings has been completed (in autumn, 1967). When the permanent buildings have been completed, the present buildings, put up largely in standardised concrete elements, will be put

*1. It must be added that the reduction apparently was not due solely to a university re-appraisal in view of the new concept, but also in part to the work of a Land government committee at a time when a general recession began to set in and public funds became scarcer than wont.

to other use; the largest one is to become a student centre, twenty smaller ones will be used as student homes for about twelve students each, and the four laboratory buildings are to be available for new disciplines and temporary group projects.

The final site of the university is just outside the town gates and will have a distinct campus character. The concept is emphasised by the physical lay-out: on an extremely large university area, 220 hectares of sloping country, bordering on woodland, the university itself will be a compact centre, the majority of buildings forming a cross with about 350 metres for each axis; the university community, a suburb of its own, will be within short walking distance across a small river valley. The design leads easily to the assumption of a desire to leave room for considerable expansion, a concept that perhaps when the new structures have been tested by experience they will grow into a "full-size" university, this proving unjustified the frequent criticism of the Konstanz experiment as a luxury with no significance for larger universities. That assumption is, however, refuted by Konstanz spokesmen. The reasons given for location and lay-out were partly of a technical nature, partly the desire to assure that the university would not be hemmed in by office and industry buildings. Still we are not quite convinced that the above assumption may not prove justified some day[1].

In spite of the difference in size and structure, the principles of the design for Bochum are surprisingly similar, including the compact university block in a large sloping area outside the city, and the university community within walking distance. Here, too, lay-out and architectural design are conceived as a function of the structure principle of "close interlacing of disciplines". The 18 departments are organised in four large blocks (natural sciences, engineering, humanities and social sciences, medicine) which immediately recall the Konstanz faculties as blocks of subject groups. They are centred about the "forum" and the central facilities buildings (administration, main lecture hall, library, dining hall, student union, shops). For each of the four blocks, adjacent space is set aside for at least doubling, if necessary. Part of the surrounding area is woodland which is to remain untouched. The grounds for the university clinics, which are planned for the last phase of construction, are located at some distance.

The whole university complex forms a rectangle of about 1,000 by 400 metres, divided into four parts (the four department blocks) again by a cross of "space roads" 100 metres wide and meeting in the "forum". The slight gradient has been used to construct the whole complex in the sense of one single building of 1,000 by 400 metres, one or two storeys high, the terraced flat roof providing the "ground level" for pedestrian traffic and the 13 individual buildings of six to seven storeys. Under the "forum" area, that basement region will be used for three parking decks.

Each of the 13 buildings consists of two parts, a square two storey "ground region" of 120 by 120 metres from which rises the rectangular seven-storey "pile region" of 112.50 by 22.50 metres. The "ground region", which is broken up into a number of rectangular wings by square open air courts, accommodates those functions that are not suitable for the "pile": workshops, research apparatus, lecture rooms. The "pile

* 1. In an end-of-the-year message, the Prime Minister of the Land Baden-Würtemberg said that Konstanz would increasingly have to fulfil a "relief function" with regard to the numerical pressure on all universities. This statement, though vague and perhaps intended to pacify understandable envy from other universities rather than to announce a change of policy, seems to have caused some concern at Konstanz.

region" is to house those functions that from the point of view of space, weight, noise and number of users are suitable for "piling": laboratories, library and study rooms, offices, etc. Of these buildings, the natural sciences block will have four, the other three will have three each (clinical medicine not included).

According to present estimates and based on current prices, the total cost of ground purchase, development, construction and basic equipment of Bochum University and its service installations will be DM 2,064.4 million. Of this, 150.8 million is provided for in the 1968 budget, which is only slightly above the expenditure of the three previous years. The total estimate for construction alone, i.e. the sum roughly comparable to the DM 250 million for Konstanz, is DM 1,657.8 million. For a number of reasons, however, these amounts cannot simply be compared and related to student numbers:

- Such estimates can be taken only as approximate; for the construction part, the Bochum estimates are quite detailed already and have been corrected - upward in some cases for planning, downward in some cases for construction - upon experience; for basic equipment, the estimate of DM 300 million seems rather rough (that amount is not included in the comparison figure above, but given only for illustration of the point). It seems safe to assume that due to the less advanced stage of the Konstanz project, the construction estimate is somewhat less definite than for Bochum.
- The original capacity goal for Bochum was 10-12,000 students, but it is generally accepted that without significant expansion of facilities, though with some compromise in what were considered realistic ideal conditions, the number of students can be much higher.
- Bochum will include two subjects requiring particularly high capital investment which are not represented at Konstanz (medicine and technology).

The total estimate for development and construction at Bochum can be broken down as follows:

- development: DM 160 million;
- construction of humanities and social sciences block (departments I-VIII, 125 chairholding professors; 3 "staple" buildings): DM 137 million;
- construction of engineering sciences (departments IX-X, 40 chairholding professors; 3 "staple" buildings): DM 208.5 million;
- construction of natural sciences (departments XI-XV, 50 chairholding professors; 4 "staple" buildings): DM 336.4 million;
- construction of medical sciences (departments XVI-XVIII, 42 chairholding professors; 3 "staple" buildings and a hospital centre with about 1,300 beds): DM 535 million.

A project of such magnitude poses special problems, even when the funds are in principle assured by the state. These problems are especially acute when there is urgent interest to accomplish construction within as short a period as possible, and to use the individual buildings as soon as they are ready. Therefore an essential feature from the very beginning has been a system of "network-planning" with the aid of a computer. All data on personnel, material and the progress of work were related to each other, and any change from the original plans could be checked with regard to the whole complex of possible consequences.

Even if one disregards the cost factor, it would have been extremely difficult, if not impossible, to recruit and co-ordinate the necessary total work capacity for conventional construction methods from regional industry. Construction is, however, based on standardised concrete elements which are produced in a factory that has been set up on the site. The basic measurement unit is a "modul" of 1,875 metres square, the basic construction and production element, that of 4 "moduls" 7.5 by 7.5 metres. The 13 "staples" each have a surface area of 15 by 3 elements (112.5 by 22.5 metres). An interesting part of these measurements is the great width of the buildings, which allows for much flexibility in subdivision: for office purposes, it will be divided into three rows of which the middle one has no outside walls and depends on artificial lighting. For other purposes (seminar rooms and libraries, laboratories) two or all three rows may be combined into one large room covering the full 22.5 metre-width of the building. Partition walls can with relative ease be put in or taken out so as to permit later adjustment to changing requirements.

The following example may serve as illustration for the use of one of the floors of a total of 2,570 square metres: 22 staff rooms (5 chairholders' offices, a secretary's room and two rooms for assistants); two conference and seminar rooms with 26 places each; one large lecture room (about 100 seats); one small lecture room (about 65 seats); three rooms for exercises with small student groups with a total of 90 desk places; two large seminar and study rooms with a total of 126 desk places and open shelves for about 37,000 volumes. Additional rooms include a tea kitchen and two smaller lobbies.

Again we should like to return to the Konstanz plans, where related disciplines will also be housed in one building. There, however, an essential feature was that as many general facilities (laboratories, workshops) as possible be for common use, mainly on the ground floor. The purpose was ideal as well as practical; rationalisation and inter-disciplinary contacts. While Bochum follows the same principle, it does not seem to have been as successful in its endeavours to break down the chairholders' reserve against common use of certain facilities. It is, of course, not possible to evaluate either system until both have been tested by several years of experience, but the tentative comparison may serve to demonstrate the interdependence of administrative structure, internal university policy, research organisation and practical questions of construction and economy on the chances of success of innovation in either university.

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Part III

CONCLUSIONS

The subject this study deals with is of a complex nature, not only because there is a wide range of problems with different solutions planned or tried out in different places, but also because of the complexity of motives and implications of each individual problem and attempted solution. Yet, a concluding chapter calls for an evaluation in brief statements that must necessarily neglect the many qualifications of the subject. In the following paragraphs, we shall try to sum up the main findings and what we consider the most important innovations and put them in a general context, with strong emphasis that for proper understanding reference must be made by the reader to the complete text.

In order to permit concentrated representation, the outline of this chapter will be adapted to the national situation rather than duplicating the one in the main body of the study.

A. MOTIVES FOR INNOVATION

One set of motives for innovation in the German universities can be likened to the situation in other industrial societies because of similar underlying factors - social policy and development, economic structure and development, the socio-economic function of the university, and the development of science - from which the needs for innovation arise. The main motives in this group are:

- the need to cope with rapidly increasing student numbers;
- the need to cope with the organisational and financial demands of modern scientific research;
- the need to adapt content and methods of university education to the development of science and scientific work;
- the need to adapt content and methods of university education to the university's new functions in society;
- the need to develop new administrative structures (within the autonomous university, and between university and state, society and industry) in order to provide the necessary framework for an efficient policy to meet other needs.

Another set of motives seems rather particular to the national situation in Germany; even those which might be considered as individual aspects of the general motives just mentioned are, in their characteristics and policy implications, determined by national traditions and attitudes rather than the general development of science in modern society. The main ones in this group are:

- the need for the university to understand better, and to accept more fully the consequences of its "social service" function with regard to training professional manpower;
- the need to reconcile the concept of academic freedom with rather strictly organised study programmes, achievement control, etc.;
- the need to break down the features of hierarchy and "institute monocracy" in the university structure in the interest of social policy and of efficiency in teaching, research, and the use of equipment and facilities;
- the need to establish a co-ordinated national science and university policy within a system of autonomous universities under authority of the governments of the individual Laender;
- the need to achieve better representation of certain social groups in the university;
- the need to achieve all these measures at a time when the universities are already overcrowded.

The difficulties are increased because the effects of German policy between 1933 and 1945 must, to some extent, still be overcome; this refers not only to the loss of universities and the destruction of facilities, but to the disastrous effects of pre-war policy on academic staff and the universities as a whole.

In 1937/38, the territory of the German Reich, corresponding to the present Federal Republic (including Berlin), comprised 50 institutions of university rank (including Theological Schools) with a total of 46,072 students; in 1960/61 there were 39 institutions with 206,067 students in the Federal Republic, and the number of students for 1980 is expected to be above 500,000. These numbers were the main reason for the founding of new universities, not only to better study conditions, but also to maintain acceptable conditions for university research, which holds a greater share in the total national research effort than, e.g., in Great Britain.

In connection with the drive for increased capacity, there was the drive for university reform. As the existing universities proved slow and hesitant, the planned new ones came to be looked upon as possible "pilots" and "stimulators" for general reform in the organisation of study and research, staff structure and university constitutions. Generally speaking, the innovation aspect was only a secondary motive, or a consequence rather than a cause, in plans for the establishment of new universities; the fact that the innovation potential of new foundations gained in importance is largely because the general need for reform was not sufficiently met by existing universities. The main exception is the university of Konstanz where, from the beginning, innovation ranked above capacity increase as motive. A similar spirit, with perhaps even stronger emphasis on research, marks the present plans for Bielefeld University (Nordrhein-Westfalen). Since some of the ideas planned or implemented at these universities have recently obtained wider support or even been proclaimed as aims for general reform (cf. statement of WRK, p. 151, and its recommendation on the status of assistants of February, 1968 p. 152), it may generally be assumed that:

- the existing universities will more rapidly adopt some of the innovative features (especially study programmes and staff structure);
- the new universities presently in the planning stage or at least not yet cased in by established regulations and constitutions (Bielefeld, Dortmund, Düsseldorf, Bremen) will adopt additional innovative measures.

The first new foundations after 1945 were established even before the foundation of the Federal Republic, i.e. at the time of military government and occupation zones, special status of the Saar region, and the breaking up of joint allied administration for Berlin. While possessing some individual features in administrative structure, construction or academic programmes, they followed basically the traditional pattern:

- Mainz University (founded in 1946);
- Saarland University (1947);
- Free University Berlin (1948).

In addition, the Giessen College of Agriculture was gradually expanded into a full university (strictly speaking, it was the re-founding of a university that had existed in 1945). In spite of the sharp increase in student numbers from the early 'fifties, this decade witnessed no new foundation, the energy of the Laender in the higher education sector being

concentrated on reconstruction and expansion of the old universities. In 1960, there were in existence 18 universities, nine technical universities, and four academies of university rank (one each for medicine, veterinary medicine, agriculture, economics and social sciences - the latter one incorporated into an existing university in 1967).

In the same year, the WR recommended the foundation of three new universities, one new technical university and seven new medical academies. The actual development has exceeded these recommendations considerably, but at the same time the rapid increase in student numbers has far surpassed expectations. Of the following list of new foundations or projects, the three in capital letters are the special objects of this study; the ones that are underlined also are of special significance for innovation and reform and will each be characterised in a brief paragraph below[1]:

- BOCHUM UNIVERSITY (with medical faculty at Essen);
- KONSTANZ UNIVERSITY;
- AACHEN TECHNICAL UNIVERSITY (Medical Faculty);
- Regensburg University;
- Bremen University;
- Bielefeld University;
- Dortmund University;
- Ulm University;
- Düsseldorf University (founded in 1965 by adding two faculties - humanities; science - to the Düsseldorf Medical Academy; students 1967/68: 1,001; estimated capacity 1974/75: 3,300);
- Hanover Medical Academy;

  Leubeck Medical Academy (founded in 1964 as "second medical faculty" of Kiel University; planned capacity about 850);
- Augsburg Medical Academy (in planning stage; student capacity about 1,000).

In addition, the facilities for the study of medicine have been expanded at several old universities.

Regensburg University

Regensburg University accepted its first students for the 1967/68, winter semester. It has four faculties only (Theology, Law and Economics, Philosophy, Science; total student number planned about 8,000), subdivided into 13 subject groups with a maximum of 15 to 20 chair-holding professors each. The subject groups ("Fachbereriche") - the new layer in university structure that is advocated almost unanimously in the general discussion on university reform - have absorbed considerable power from the traditional levels above (faculty) and below (individual chair-holder and institute): they are responsible for the academic

*1. The main source of the information on new universities given here is the KMK brochure "Zu vordringlichen Fragen der Hochschulpolitik" ("On Urgent Questions of University Policy") published in October, 1968.

teaching programme, examinations, "Habilitation" (awarding of professorial qualification) and also for the allocation of personnel and funds beyond a guaranteed "basic stock" provision of staff and funds for each chair. They are to use the authority in the interest of co-operation and co-ordination within the subject group and between groups; the same interest is served by the possibility of one professor belonging to several subject groups, and by the plan to establish central institutes for inter-disciplinary subjects. There is only one central library which also fulfils the function of the traditional institute libraries. Vacant chairs are advertised.

Even from these brief notes, the relations to the Konstanz experiment are obvious.

Bremen University

The plans for establishing a new university at Bremen have long been postponed by financial and other difficulties. It is now expected to admit its first students in 1972. The final capacity is to be 7,000 students. The faculties will be subdivided into departments ("Abteilungen") and there will be special institutes for inter-faculty teaching and research, e.g. an institute for oceonography between the faculty for mathematics, physics and chemistry and the one for biology and medicine. Another special feature is a faculty for fine arts, music and acting (in the traditional system, only musicology and art history are located at the University, whereas music and fine arts are taught at special academies of music or fine arts). The library system will be similar to that at Regensburg. The plans further rule out the traditional system that each chair-holding professor is also director of a special institute or seminar.

Bielefeld University

This project has been referred to several times in this study. It is in many ways closer to Konstanz than any other, including being subject to criticism on the grounds of "luxury". The university, which is expected to admit its first students for the 1969/70 winter semester, is planned to have four traditional faculities (humanities; law; economics and social sciences; natural sciences) and a student enrolment of only about 4,000. The emphasis is not so much on numbers as on intensive guidance and research, especially in inter-disciplinary projects. In order not to neglect either of these two essential university functions, the plans foresee each professor to be responsible for the counselling and guidance of 30 students and clearly defined teaching obligations, but he is to be relieved from teaching duties every other year to enable him to devote most of his energy to research (his guidance functions will continue). In academic work, the basic units are the subject groups ("Fachbereiche"). The chair-holders decide jointly on the main research projects for co-operative and inter-disciplinary research. For larger inter-disciplinary projects, a special centre for inter-disciplinary research will be established where scientists from other universities and countries will also be invited to participate.

Similar to the Konstanz practices, the professor accepting a call to Bielefeld will negotiate only his personal salary with the Land Ministry. The university itself will decide upon personnel and equipment within the framework of a development and financing plan worked out in co-ordination with the Ministry.

Dortmund University

While still in the planning stage, the technical university project was developed into that for a full university; the range of disciplines will be limited, but engineering will be included. The first group of students has been admitted for the 1968/69 winter term; final capacity is to be about 10,000 students. Special plans have been worked out for close co-operation between university and teacher training college ("Paedagogische Hochschule") for the training of teachers for the first and second levels of primary school; admission requirement is also the "Abitur", and there is discussion on either integrating these colleges into the university where sedondary school teachers are trained, or assigning some of the university's training functions to the training colleges.

The traditional "Fakultaten" are replaced by the Bochum-type departments ("Abteilungen"). The rector is elected for a term of ten years, and his position is rather strong. The budget provisions are not made for the individual chair, but for each department. A link with the outside world - and perhaps a certain balance against a strong long-term rector - is provided by a "Kuratorium" of independent persons whose task includes supervising the faithful execution of the founding committee's principles.

Ulm University

The university was originally conceived as a medical academy, and - while a science faculty is to be added - the emphasis will evidently remain on medicine. Teaching is expected to begin in the 1969/70 winter term, and the final capacity is to be about 2,000 students. Like at Konstanz, the rector will be elected for an indefinite period. The faculties will be subdivided into subject groups with similar functions to those at Konstanz (though they are called "Fachgruppen" at Ulm and "Fachbereiche" at Konstanz and their position in comparison to that of the faculties does not seem quite as strong as at Konstanz). The smaller units (institutes, medical clinics) that were the strongholds of hierarchical power will be abolished and replaced by facilities for co-operation and collegiate responsibility. There are detailed plans to ensure intensive and efficient tutoring and student guidance. In medicine, a carefully planned programme of instruction in small groups and early bedside teaching has been worked out. By adding one more study year (the sixth) and organising it as an "intern year", the planners of Ulm University hope that the traditionally longer period of medical assistantship for young doctors will be waived. (The examination requirements and training conditions for medical doctors are the responsibility of the Federal Ministry of Health; the Ministry has towards the end of 1968 worked out new regulations for medical training that correspond to the main features of the Ulm concept).

Hanover Medical Academy

The academy, which is planned for about 1,000 students, was opened in 1965. It has some features that recall the Aachen plans; full equality of all academic staff with professorial qualification with regard to academic staff with professorial qualification with regard to academic self-administration and policy organs; strong representation and voting rights of assistants and students; organisation into sections and department; a system for equalisation of private income (though, as in Aachen, this problem does not yet seem to have been solved satisfactorily). Special emphasis is placed on intensive guidance of the students and continued

study of the teachers themselves. There is a special dean for student affairs and one for continued staff training. A detailed study plan has been worked out; the students are divided into study groups of 16, and a tutorial is obligatory.

In view of the expected increase in the number of "Abiturienten" (of whom 80% are expected to enter a university), the German universities will be even more overcrowded than at present when all the above universities have been completed, even if the tendency towards increased study duration can be reversed. Consequently, considerations today are toward:

- establishing new "short-course" study programmes;
- raising status ("university") and entrance requirements ("Abitur") for a group of non-university institutions (e.g. colleges of engineering);
- diverting "Abitur" candidates two years before they would take their "Abitur" by creating a new certificate at that stage ("Akademiereife") to qualify for the non-university institutions[1].

So far, the problem is mainly one of creating enough study places for all qualified candidates. In the next decade, however, it is expected to become one of finding adequate jobs for university graduates in certain professions, while there is a scarcity at the "second level" of the professional pyramid. Because of special features of professional qualifications and career regulations, substitution is more difficult than in other countries where there is a more flexible manpower structure.

With regard to the essential problems of future university policy, however, the individual universities - new or old - cannot try out innovations on their own, since they are bound by national and Land regulations.

*1. For the policy situation with regard to these three points by the end of 1968, cf. pp. 35 and 36 (promotion of certain institutions into the higher education sector; these institutions can be reached via other schools than the Gymnasium, and one year before the "Abitur" age; their study programmes are to last only three years).

B. INNOVATION IN ADMINISTRATIVE AND STAFF STRUCTURE

The basic framework of autonomous universities maintained by public funds creates the following main problem areas:

- within the university: to assure competence, consistence and continuity of policy within autonomous and co-operative self-government;
- between the university and the state: to assure co-operation and a proper balance between the autonomous university and overall science policy.

1. UNIVERSITY SELF-ADMINISTRATION

The most important example is given by Konstanz, where:

- the traditional temporary rector is replaced by a permanent one;
- executive responsibilities traditionally resting with the Land Ministry or the individual faculties have been turned over to the little senate.

Rector and little senate together thus form an exceptionally strong executive, with the large senate serving as a kind of university parliament. For consistent and coherent university policy, this seems a promising organisation. Overall science policy interests seem to depend on the attitude and co-operation between the state representatives and the university rector even more than in the traditional system. Concentration and continuity of power at the head of the individual university calls for corresponding competence, authority and clearness of policy on the state side.

Though there have been no important changes at the head of the two other universities (except for a certain tendency towards a longer tenure of the rector at Bochum), both Aachen and Bochum - as well as Konstanz - have taken important measures with regard to the structure and role of the faculties as units of university self government.

At Aachen, the medical faculty has been divided into smaller independent units for teaching and research, and in each of these the hierarchical structure of staff has been replaced by a collegiate system, giving non-"Ordinarii" a considerable share in academic work and university self-government. In the latter field, however, the system will not have its real test for at least the first five years, since for this period the real policy organ for the faculty is a "Kuratorium" which acts for the senate (not the faculty) and most of whose members are not from Aachen University.

For the sake of adequate structures in academic research and teaching, Bochum has abolished the traditional faculties (certain groups of university

disciplines) and organised the range of subjects into 18 smaller units ("Abteilungen", departments). For the same purpose, it has somewhat reduced the traditional number of institutes, and has established the system of collegiate leadership for each institute. Essential demands for "democratisation" within the research and teaching staff have thus been met. In university self government, however, the staff of the 18 departments became faculties again, with essentially the same descending scale of rights and privileges through the ranks of staff, and with essentially the same power within and towards university government, as in the traditional system.

Konstanz, on the other hand, has maintained the traditional units of the faculties, but has transferred a good deal of their administrative and financial authority to the rector, little senate and research commission, and their responsibility for the organisation of teaching and research to the smaller subject groups. Their main tasks now remain the administering of examinations and the awarding of degrees.

2. STAFF STATUS

As for the legal status of academic staff (civil servants), the conditions in Germany do not permit important innovations by an individual university. The new "extra-Ordinarius" at Konstanz is generally considered as a pattern for planned changes at other universities. The general tendency is towards making the non-chairholding, fully qualified members of academic staff more independent of the "ordinarius". At Konstanz, independence even goes so far as their having research funds of their own.

To train and qualify future professors, Konstanz is the only university so far to have transferred authority from the individual chair-holding professor to a senate committee. In view of the organisational and psychological consequences of the traditional system, with the scientist aspiring to "Habilitation" being, or at any rate feeling, at the mercy of one professor, this change seems to be an important step towards independence for junior scientists and perhaps also towards more objective selection and evaluation of scientific ability and promise.

Two other new universities, Ulm and Regensburg, have taken another step in a similar direction by advertising vacant chairs and inviting applications. The three universities here under consideration, however, adhere to the traditional system of the qualified scientist waiting and hoping to receive a "call". (For Ulm and Regensburg, too, the final decision is made by the Education Ministry upon recommendation of three candidates, in order of priority, submitted by the university). It is surprising that Konstanz has not followed this practice as well, since it seems to be consistent with the general policy[1].

3. STUDENT STATUS

A greater share in university self-government is the primary demand of today's "student rebellion" ("one-third parity"), and most universities are working out plans to meet the demand, though none is

*1. By the end of 1968, Konstanz - as well as a number of other universities - had turned to advertising vacancies.

willing to do so completely. At Konstanz, too, the radical demands are far from being met; but in comparison with the usual pattern (two students in senate when matters concerning student affairs are on the agenda), representation of the student body in the various organs of university self-government is much stronger[1].

4. STATE ADMINISTRATION

The most important innovation is again the delegation of traditional state responsibilities to the university as at Konstanz where the university receives a large part of its funds in lump sum payments and decides on the allocation itself. The possible advantages and disadvantages of this procedure are discussed in various sections of Chapter II.

At Bochum, the position of the "Kanzler" is somewhat stronger than that of his colleagues at other universities, but in principle the traditional relation between state administration and academic self-administration has been maintained.

5. PLANS AND PROSPECTS

The only definite plan that can be cited, that of freeing the assistants from their dependence on one individual professor, has already been mentioned. It is only part of an increasing tendency of university policy to meet the demands for "democratisation" of the university constitution, i.e. for breaking up the hierarchical structure in self-government and in academic work. In early March, 1968, the Baden-Würtemberg parliament passed a "University Bill" establishing the general framework for new university constitutions and specifying the representation of students and assistants in university affairs. Though parliament proclaimed it "the most progressive university law in Germany", it was denounced as reactionary by student opposition. The bill went further than any parliament or university would have been willing to go a year before, but student demands have increased even faster and today often seem to consider university policy as just a vehicle for social policy ideals.

Aside from this issue, the main need within the university seems to be for greater coherence, i.e. for strengthening the head of self-administration against the individual faculties and chair-holders. Konstanz seems to offer an example here. Such a development must be balanced, however, by measures to insure co-ordination of the individual university's policy with national policy needs and plans. If not, the urgently needed and long delayed structural reforms in university teaching and research might be even more difficult to accomplish than at present. For illustration, we cite the "West German Rectors' Conference[2]", the universities' main organ for overall policy determination. It is generally considered a rather conservative body, but there is no doubt it would be much more conservative if all universities had established permanent rectors, say in 1960, and the Conference's membership had not changed since.

* 1. In the summer of 1968, Bochum - as well as a number of other universities - changed its constitution to allow for stronger student representation on the main bodies of university self-government.
* 2. WRK.

C. INNOVATION IN UNIVERSITY STUDIES

The main problem in this sector is not just, as in other countries, the use of modern methods or the creation of new study programmes for new fields of science and professional activity; even in teaching basic material in the traditional manner, the university has proved increasingly inefficient. Thus, the main problem is one of drop-out and increasing study duration. This is aggravated by the numerical problem, of which it is one important reason and partly a consequence. Innovative measures so far are limited to improving conditions within the traditional framework. More radical measures, such as promoting non-university institutes to university rank, offering short-course study programmes on a large scale and introducing full programmes through correspondance courses, are being discussed or tried out on a limited scale. Innovation through establishing special admission requirements is legally not possible for an individual university. If the universities restrict admission because of lack of facilities - as they have been forced to do in medicine and are increasingly doing in several other fields - this requires Ministry approval. Konstanz is a special case in that there the number of students is clearly fixed. The principle that every student who fulfils the formal requirement, i.e. possesses the "Abitur" or equivalent, is equally qualified and is acknowledged by the Konstanz system of selection: it is made through a lottery system, regardless of marks, recommendations or other criteria[1].

1. ORGANISATION OF STUDIES

The most important feature in the organisation of studies is the gradual introduction of the measures suggested by the WR: a regular study course of four years in two stages, with an interim examination after the first two years; an advanced study course for only an especially qualified minority. The first proposal, at least the first study phase and the interim examination, is presently being implemented on the national scale.

Bochum is somewhat more advanced in this innovation than most other universities, except for the humanities at Aachen. In both places, relatively stringent and detailed regulations for the first stage are practised, including the time for the interim examination (usually "as a rule, after the fourth semester, at the latest, after the fifth; in case

* 1. In December, 1968 the WR hinted in a statement on university reform that the universities should generally establish admission requirements in addition to the "Abitur", but this would require a change of principle in state policy. At the same time, a number of law suits are in progress against medical faculties from applicants that were not accepted because of lack of study places. In an end-of-the-year message, the Prime Minister of Baden-Württemberg caused some concern among the Konstanz reformers by indicating that, in view of the "student avalanche", greater attention might have to be given to developing numerical capacity at Konstanz.

of failure, it may be repeated once within another year"), but the corresponding regulations for the second stage are more vague not only for the programme, but also for the time limit.

At Konstanz, the measures corresponding to the WR plans are more comprehensive and more rigorous. While leaving the student greater choice as he advances, the programme covers the whole span from entrance to first degree, and includes the special provisions for acceptance into the "post-graduate" phase, i.e. the WR's "Aufbaustudium", for the especially gifted (Aachen is at present developing plans to establish such a special programme in the field of engineering). Through the establishment of a new degree ("Lizenziat") and the possibility of meeting the requirements for several examinations by the same programme (combination of first state examination and Magister; partly also of "Lizenziat" and doctorate), Konstanz is taking steps of its own to permit concentrated and efficient studies.

Among new inter-disciplinary study programmes, the Aachen plans for a degree course in bio-medical engineering seem of particular interest. The Konstanz plans for offering an "Aufbaustudium" programme in another discipline ("complementary study") deserve mention as well. In addition to the combined programme for economics and business administration, the Bochum plans for co-operation between engineering, law and social sciences indicate a similar tendency within the traditional disciplines.

2. CONTENT AND METHOD OF STUDIES

The general tendency here is towards a broad background in science and scientific method, and a flexible programme to allow specialisation in the advanced study stage. There is some controversy between the traditional principle of introducing every student from the first semester to the problems and methods of research in his discipline and the new idea that academic teaching and research training be separated, the latter being reserved for the especially qualified minority. On the whole, however, the former principle is upheld. Reform measures are aimed at:

- reducing and co-ordinating subject matter;
- providing better guidance, control and self-control of the student;
- shifting the method of instruction from basic lectures to seminars, group work, tutorials, etc., to encourage active student participation from the beginning.

The main points to be retained are:

- systematic co-ordination of lectures and small tutorial groups, and the emphasis on seminars and exercises for beginners at Bochum;
- experimental plans for a "new type of academic course" (combining elements of lecture, seminar, panel (discussion) at Konstanz;
- emphasis on early bedside teaching for medical students at Bochum and Aachen;
- general emphasis on increasing "medium cadre" staff in the interest of more intensive and efficient courses.

3. PLANS AND PROSPECTS

It seems safe to assume that the general discussion of the principles

- "academic freedom" versus "regulated study programme and limitation of study period";
- "teaching of professional knowledge and skills" versus "introduction to research for all students"

will continue. At the same time, two-stage study programmes with an interim examination will lead to greater regularity. The next step will probably be a stricter control of time limits for interim and first degree examinations, combined with an introduction of special regulations for advanced studies. The system will probably, in the end, resemble the English one of undergraduate and post-graduate studies, though in this comparison some differences must be considered: upon entering the university, the German student will probably continue to be older and to have a broader background knowledge of science and the humanities than the English student; he will, on the other hand, be less advanced in those disciplines in which the English student has concentrated during the last years of school; he will, furthermore, study at least one year longer and may be expected to possess a somewhat more advanced academic education upon graduation.

Another tendency concerns some of the so-called "mass disciplines", e.g. sociology, law, economics and business administration, psychology, medicine. Here the problem is not just one of lack of facilities, but also of doubtful career prospects. What has been suggested, though without much approval so far, is the creation of new short-cycle study programmes of about three years with the corresponding creation of a new level in the professional structure. Within this group of overcrowded "mass disciplines", the ones where secondary school teacher training is concentrated present a special case. All future teachers - primary, secondary or vocational - must have the "Abitur". Future elementary and primary school teachers[1] however, (representing about 10% of the annual number of "Abiturienten") are trained for three years at special institutes ("Paedagogische Hochschulen"). "Realschule" (short-course secondary school) teachers spend at least three, "Gymnasium" and vocational school teachers at least four years at the university studying two subjects plus education and philosophy.

At the beginning og this decade Picht began to shock the public with his surveys on the future need for qualified manpower, which in terms of the German system meant the future need for "Abiturienten", by arguing that the then existing conditions (graduates in per cent of age group; age structure of teaching profession; average period of professional activity for women) would require practically every graduate to become a teacher if only the minimum needs for educational expansion were to be met. This was one of the arguments in his series on the "Educational Catastrophe" (Die deutsche Bildungskatastrophe") that contributed to public awareness, campaigns for better education for more people, and to what is now called the "Educational Explosion" ("Bildungsexplosion"). The sharp rise in secondary education attendance has, for the time being, made the teacher shortage more acute, but promises a sufficient supply

* 1. Formerly "Volksschüle" now "Grundschüle" (age 6-10) and "Hauptschüle (10-15), compulsory secondary school for those not going to "Realschüle" (10-16) or "Gymnasiüm" (10-19).

in the 'seventies. The Nordrhein-Westfalen Education Ministry has calculated that, if the present teacher-pupil ratio is maintained, there will be a surplus in Grund- and Hauptschule as well as Realschule as from 1975, but a continued shortage at the Gymnasium into the 'eighties. At the same time, however, the university departments where the urgently needed additional teachers should be trained (mainly in the humanities) are already overcrowded. In other subjects (notably mathematics, physics, chemistry, biology, geography) the numbers problem is only slightly less serious, but the shortage of teachers is correspondingly greater, and the problem of extensive study duration most acute. The importance of teacher training for higher education and planning may be illustrated by the fact that the 1968 "Recommendations I" of the Nordrhein-Westfalen Council on Higher Education, which deals with the development of higher education until 1975, assume that about one-half of all study beginners (including the "Paedagogische Hochschulen", which train only teachers, and also including the university programmes for vocational school teachers) will prepare for a teacher's examination. This estimate has not been deducted from the estimated manpower demand, but from the actual distribution of study beginners over the past years. If the projection is maintained, and present conditions continue (average teacher-pupil ratio; average number of years spent at school; average study devotion, drop-out before entering upon or during professional activity), supply and demand in general education are expected to meet soon after 1975. It seems safe to assume, however, that the initiation of present reform plans (a 10th year of compulsory full-time education; full-time upper secondary schools to prepare for colleges of the "Ingenieurschule" type; a drive for more all-day schools) will postpone that occurrence by a number of years.

D. INNOVATION IN UNIVERSITY RESEARCH

The main national problems in this sector are partly related to defining and implementing a comprehensive national science policy, and partly to adapting the structure of the individual university to the needs of modern scientific research. The most important aspects of these general issues are:

- to co-ordinate university and non-university research;
- to replace the idea of "each university equally strong in all fields" by that of a planned pattern of "centres of excellence";
- to replace the individual institute as a basic unit for research by larger and more efficient units;
- to replace the hierarchical structure of university staff and the monocratic position of the individual institute director by organisational forms which permit modern research methods and efficient use of facilities;
- to co-ordinate administrative and academic responsibility for research financing.

The question is, of course, also one of adequacy of funds for research. But in the German situation, this is basically a question of how much is made available by the state parliaments either directly to the university in the annual budgets, or indirectly through the national science organisations (mainly the DFG, financed jointly by Bund and Laender, plus a certain share from industry).

With the increasing importance and financial demands of research, the need for co-ordination and planned development on the national scale has become more and more urgent. The first step has been the "strong point" programme of the DFG. Whereas in its "normal procedure" programme the DFG allocated its funds upon application and initiative of the individual scientist, the "strong point" programme funds are awarded upon the initiative of the organisation itself. Based upon their evaluation of the scientific scenery, the DFG defines certain disciplines or inter-disciplinary areas of research in which it feels there exists a most urgent need for development. They then suggest to a limited number of highly qualified scientists to develop research projects and to apply for special funds in those fields, of which there are about 60 in the "strong point" programme at present (e.g. econometrics, cyberbetics, immunal biology). The special support is usually terminated after some years, the main purpose being to stimulate interest and activity in fields that are generally new or have been neglected on the national scene. A stronger effect from the point of view of efficiency and co-ordination of research is expected to result from a programme that was started in 1968 upon initiative of the WR and in connection with the general drive for an increased share of the Federal Government in the financing of

higher education and research. It provides for special support for long-term co-operative projects, particularly those of an inter-disciplinary nature; these "centres of excellence" are to be establish at universities, but other research establishments may participate. The projects are defined by the institutes and scientists, and then presented for approval by the university scientist acting as "speaker" for the project. In the course of 1968, the WR screened the first set of applications and recommended about 150 projects to the special board of DFG, Bund and Laender representatives for approval and support. The funds are provided jointly by Bund and Laender and administered through the DFG.

1. UNITS FOR RESEARCH

Both Bochum and Aachen have given top priority to the need for changing the structure of the university in the interest of research. At Bochum, the traditional faculties have been divided into smaller departments in order to permit a meaningful grouping of related subjects; in addition, strong emphasis was placed on facilities for inter-disciplinary contacts (double membership of staff; supra-disciplinary institutes). Within the individual departments, the institutes are fewer in number and larger in size, and they are headed by a team of scientists each of whom acts as director for a certain period of time. For practical reasons rather than for inter-disciplinary contacts, common use of certain facilities has been provided for, but evidently not been pursued too strongly against institutional self-sufficiency.

The same principle has led to more radical consequences at Konstanz, which from the beginning was conceived as a university limited in the range of subjects and student numbers, with strong emphasis on research and on biology as a "centre of excellence" in particular. The traditional faculties have been maintained, but the "institute" in any form whatever has been completely abolished (as a journalist said in an article on Konstanz, "Even the word' Institut' seems to be as taboo at Konstanz today as four-letter words were in Victorian literature"). Within each "subject group" ("Fachbereich") - the smaller units which have taken over many of the traditional faculty' s tasks for academic teaching - and between related groups, co-ordination and co-operation are provided through:

- the physical structure (one floor per subject group, common facilities on ground floor);
- the function of the university' s research commission which disposes of funds and to which progress reports must be made;
- the establishment of inter-disciplinary research groups (more loosely organised, for a limited time and project) and research centres (for larger projects and a longer period of time, with staff and facilities of their own).

Of these, the research groups and research centres are especially interesting because of the flexibility which seems to correspond to the nature of inter-disciplinary research.

For the medical faculty at Aachen, the plans of establishing an institute for bio-medical engineering are of special interest from the inter-disciplinary point of view. Within the medical field, the division of the faculty into sections and departments, plans to break up the hierarchical staff structure to the point of establishing a common fund from private

income, and the establishment of a centre for clinical research all reflect the interest in establishing more adequate units for modern research.

2. STAFF FOR RESEARCH

This aspect is, of course, closely related to the one of organisational and physical units. Whatever form and name the unit may have, the general need is that of team-work and full participation of all qualified research personnel. Again, Konstanz seems to have gone furthest in this respect through:

- assigning the assistant not to one professor, but to the "subject group" as a whole;
- establishing precise rules for the minimum amount of space and facilities each scientist should have for research;
- allowing all ranks of scientists, including assistants, to apply directly to the research commission for funds.

The main feature at Bochum is that of collegiate institute administration, with "medium cadre" scientists eligible for the position of acting director.

3. FINANCING OF RESEARCH

In the traditional system, the availability of research funds often depends on the individual professor's bargaining position with the Ministry of Education when negotiating an appointment offer, and on his skill in negotiating additional funds for projects from the DFG, foundations, or industry. The problem is, of course, not wastage of funds, but co-ordination within the university and throughout the state and nation as a condition of an efficient science policy. For the individual university research unit, this means that the funds available for personnel and material must be considered with regard to that unit's place and function in the overall research pattern. This may require "injustice" in the sense of starving one institute and supporting another luxuriously. The basic outlines of this pattern must be on the national scale, but it remains for the individual university to act according to the pattern, and to ensure economy and efficiency in the use of facilities and personnel.

Except for the consequences of the changes in organisation of research units and staff, Bochum and the medical faculty at Aachen do not represent important innovations though they may soon be responsible themselves for the allocation of regular budget funds to the various disciplines. Konstanz is already practising this, and through its research commission maintains university control of the research carried out in all individual units. The commission must also be informed of any outside funds for research. Similarly, costly research facilities are not under the control of one research unit, but under the technical director responsible for economy and efficiency in purchase and operation.

4. PLANS AND PROSPECTS

The need for university research

- to form larger units, and
- to specialise and concentrate in certain fields of research within a national pattern

has been generally accepted, and so have, in principle, the plans of the national organisations to meet it. The question remains whether the consequences with regard to size and importance of the individual university institute will be accepted by the institute director and the university soon enough to check the present tendency for important research fields to establish themselves outside the university, and further, whether the consequences upon what might be called "university mentality" will be accepted soon enough to meet the present tendency of promising young scientists to emigrate to an environment where they have a fuller share in responsibility.

What may prove an important step was taken by the WRK in February, 1968 when it recommended that assistants no longer be assigned to an individual professor, but to the faculty as a whole; that they have the right to do their own research for half their working time; and that after a fixed period of time it be decided whether they should be admitted to the "Habilitation" procedure or whether the contract should be discontinued. The parallels to the Konstanz model are obvious. It must be remembered, though, that the strong recommendations of the WR concerning the changes of structure and size in university institutes were made several years ago.

E. THE PRESENT SITUATION

After years of debates, proposals and individual measures the year 1968 promises to be the year of a break-through to systematic, coherent and thorough reform in higher education. During the first months, at any rate, development was so rapid that it is likely to have moved a few more steps by the time this attempt to portray the most recent picture appears[1].

The first observation has a direct bearing upon the special purpose of this study; it seems that many of the innovations now widely discussed or about to be implemented are based upon experiences in the new universities; their stimulating effect towards innovation thus seems to have been more powerful and made itself felt much sooner than was generally foreseen.

One of the main reasons for greater determination and urgency in university reform has no doubt been "student unrest". As has been described in the section Role and Status of Students, their legal scope for participation in the shaping of university policy in the traditional system was rather limited. Their de facto - and in recent times political - influence has, however, gone considerably beyond the limited scope provided in the university constitutions.

In evaluating the recent student activities, one must differentiate between two different lines of action and aims. The one has been striving directly for total reform of the university - from the rights and status of "Ordinarius", "Mittelbau", assistant and student to the organisation of research and teaching. This movement has been supported, in principle, by the whole student population and by almost all student organisations and groups. Another movement goes beyond the issue of university reform and strives for a change, be it evolutionary or revolutionary, in the political and social status quo of the Federal Republic. The latter movement is supported by only a minority of the student population (though a very active one). As in other countries, this group has succeeded in touching off general student unrest and on various occasions initiated powerful political demonstrations. These have contributed to general public awareness of the need for university reform and to political and academic readiness to meet that need, at least as much as the original student movement for reform. This is due to the general belief in responsible political and academic circles that even the radical wing of the student movement, which advocates social revolution, to a large extent has its origin in dissatisfaction with the present university system. Many comments suggest that speedier reform might have prevented the present troubles. Whether true or not - the international phenomenon of student

*1. For illustration - and qualification - of this initial paragraph, cf. "Addendum (December, 1968)" page 158.

unrest everywhere may lead to different conclusions - it is obvious that the change in student tactics from memoranda and resolutions to strikes and demonstrations has combined with the "explosion scolaire" argument to speed the political and academic "establishment" to quicker and more radical action.

The development may best be outlined chronologically by main stages:

In the summer of 1967, student unrest manifested itself in rather violent demonstrations in Berlin and, from there, spread to other universities. In Berlin, too, a group of students supported by some members of the faculty founded the so-called "Critical University". Similar experiments were started at other universities. The "Critical University" was considered a forum for integrating science and learning into the actual political and social situation, to confront science with politics and to judge its value by its social and political relevance and thereby to strengthen the opposition against the academic and political "establishment" which was felt to be authoritarian, undemocratic and repressive. Though it seems today that the experiment has been somewhat disappointing, the motives that led to its foundation continue to be part of the philosophy of the radical student minority.

In the course of the year 1967, student unrest spread and increased in intensity. It frequently expressed itself in the disturbing or boycotting of academic courses and ceremonies. One result has been, in general terms: the university of today is no longer viewed with the traditional respect because its structure and methods of research and teaching, hallowed by tradition, are no longer accepted and approved without criticism. Public criticism and challenge no longer address themselves only to certain details of the present structure and self-interpretation of the university, but to the university as such in structure and function.

The first important policy event of 1968 was the "Godesberger Rektoren-Erklaerung zur Hochschulreform" (Godesberg Declaration on University Reform of the University Rectors) of 6th January. This memorandum, sent to all Laender Ministers of Education, all Ministers of the Federal Government and a large number of parliamentarians, contained the following sentence: "The corporate constitution of the university and its place in the society of today must be re-defined". But the remaining text is somewhat abstract and non-committal, at least for the reader who expects concrete and detailed practical proposals. For instance, on the corporate organisation of the university it says that an efficient organisation and mutual co-ordination of the basic units for research and teaching might call for the abolition of traditional structures. Re-organisation according to functions would also imply a change in the system of co-responsibility of all members in university self-administration on the basis of the following principles:

- distribution of competence according to function;
- qualitative representation.

There follow a few concrete proposals which clearly refute the student demand for "one-third parity" and, at the same time, call for increased participation of all university groups in the various policy bodies. On the controversial issue of short-term rector versus long-term president, the declaration avoids taking a clear stand.

The need for all university decisions and procedures to be "transparent" and controllable is stressed, as is the need for scientific self-control in research and teaching. With the sentence "academic teaching benefits from criticism with regard to content, level, presentation and

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scientific up-to-dateness", the much-disputed claims of the students to the right of "course criticism" is acknowledged by the rectors.

On academic teaching, the declaration again throws light upon the permanent controversy over the question of whether university instruction is to be influenced primarily by professional needs or by the inherent aims of science: "Academic instruction is in form and content to be determined by the aims of study which are founded in science" ("Lehrveranstaltungen muessen nach Inhalt und Form an den wissenschaftlich begruendeten Studienzielen orientiert sein"); this means that an academic programme primarily guided by the practical needs of certain professions is not acceptable. The declaration then closes with the words: "Even if these urgent structural reforms are achieved and expansion of existing facilities and construction of new universities are carried out more rapidly than at present, the increase in the number of "Abiturienten" within the next years will still force us to make profound changes in our educational system as a whole. The universities will be involved in these changes and must be ready to meet this responsibility".

The public and political response to the declaration was probably less marked than the authors had hoped for or expected, and also less than it would have been a few months earlier. There are a number of reasons for this. First, it was only one statement, though an important one, in a series of comments and proposals from all quarters that brought the reform discussion to a peak; furthermore, its careful phraseology was interpreted as willingness to allow for evolution rather than determination to effect radical reform; finally, some of the circumstance under which it was published led to disagreement among the authors which, for a while, prevented its being used as a platform for common and efficient action by the universities as a whole. Still, the importance of the declaration is that it contained for the first time a complete set of principles for university policy ranging from administrative structure to the organisation of teaching and research, backed by all university rectors. There is a small formality which may indicate how difficult it was within the University system alone after years of reform debate to find such a common platform: the declaration was originally issued under the personal responsibility of the rectors, i.e. not as an official declaration of the WRK where the rectors are representatives of their universities. Only after several weeks of debate by the policy organs of the individual universities was it declared an official resolution of the WRK (21st February, 1968).

On the same date, the WRK decided on a radical change in its own structure and mode of procedure which had existed for about 20 years. Instead of only two meetings each year, there will be seven (one every month during the semester periods). Working groups have been set up to draft recommendations for the full assembly to debate and vote upon. They concern such major problems as: qualitative representation of the various university groups in policy bodies; status of assistants; reform of examination regulations and procedures; organisation of teaching and research. Representatives of the "Verband Deutscher Student-enschaften" (National Student Association - VDS) and of the "Bundesassistentenkonferenz"(Federal Association of Assistants, founded in March, 1968) will participate in the preparatory work of these groups.

The first recommendation based on the WRK's new reform concept was already published by the February meeting. It dealt with the status of university assistants, and its main points are: the university organs responsible for research and teaching decide on the allocation of assistant positions within the respective discipline or subject group as well as on the termination of an assistant's contract. (Thus the assistant is no

longer to be dependent solely on the individual "Ordinarius"). The assistant is to participate in research, teaching and student counselling. His share in examinations and administrative work must be compatible with his other duties. The results of his research are to be published under his name; if a publication is the result of co-operation among several staff members, the assistant is to be mentioned with the others. Academic courses which are held by an assistant are to be announced under his name. If he participates in paid research work, he is entitled to a corresponding share in compensation. The assistants have the right to consult a special senate committee in matters concerning their status.

In a resolution of 27th March, 1968, the WRK considers the "numerus clausus" issue and points out that the problem of university admission can be solved only by a general reform of secondary education and the present system of professional qualifications.

In March, 1968, WRK and KMK (Conference of Land Ministers of Education) held a joint meeting to discuss general policy issues on the basis of the WRK declaration. Only two weeks later, on 10th April, the KMK held a special meeting at Bonn and there decided on a set of "Principles for Modern University Law and Structural Reform of the Higher Education System". These principles also included some concrete and rather radical proposals:

1. On University structure:

- introduction of the presidential or the long-term rectorate system;
- strengthening of the policy authority of the state administration and of the central university administration (i.e. against individual faculties, institutes and professors) in order to permit greater efficiency and flexibility in allocating funds and personnel according to changing needs;
- combination of chairs and institutes into larger units (subject groups, departments, "small faculties") which then are to be the recipients of the detailed allocation of funds and personnel by the central administration;
- participation of all university groups, including the students, in the academic policy bodies; degree and mode of participation are to depend on the respective functions ("funktionsgerechte Mitsprache"); a fixed share (such as the "one-third parity" principle demanded by radical student spokesmen) is not considered feasible.

  (The last two points correspond in large part to the WRK declaration).

2. On staff status and structure:

- teaching obligations are to be fixed for each staff member according to type of course and amount of time;
- "Mittelbau" staff are to have a greater share and more responsibility in teaching and conducting examinations;
- assistants are to be assigned to larger research units in order to prevent their being overly dependent on an individual chair-holder;
- the "Habilitation" procedure is to be regulated so as to be more efficient and objective, in order to avoid the candidate's being dependent on one individual professor; if the candidate has already

proved his scientific qualification by publications or equivalent achievements, the requirement of a special "Habilitation" thesis is to be waived;

- vacant chairs are to be advertised; in addition to the traditional list of three names proposed by the faculty, all applications received are to be presented to the Ministry of Education;
- negotiations by the Ministry with candidates for professional appointment are to be limited to personal salary; all other conditions (personnel, research funds) are to be negotiated with the university.

Other principles concern stricter organisation of study programmes, guidance, efficiency control, and the need to develop correspondance courses and to employ modern mass media in order to overcome the present difficulties due to overcrowding. Finally, the Ministers advocate the introduction of the "study year" (instead of the semester system) to permit better long-term planning of study programmes and better utilisation of facilities and staff, especially through introductory and evaluation courses by "Mittelbau" staff between semesters, in the interest of quality and intensity of studies.

On 30th April and 7th May, 1968 the "Bundestag" (Federal Parliament) held an intensive debate on the problems of higher education and university reform. Such debates had taken place before, but none had been observed and commented upon with so much interest. This was no doubt mainly due to the fact that it had been put on the agenda because of the increasing scope and violence of student demonstrations, but this situation also set what has been called "a new atmosphere of readiness for efficient co-operation between Bund and Laender". With reference to the plans for finance reform and joint Bund-Laender activity in university expansion, the representatives of the Federal Government stressed their growing co-responsibility for this field of, originally, Laender authority. The speakers of the Laender, including in this case several Ministers of Education, made much larger use of their constitutional right to speak before the "Bundestag" than on any former occasion and stressed the need for Bund-Laender co-operation, while at the same time confirming their determination to use fully their political and administrative authority to achieve the necessary reforms.

The Federal Minister for Scientific Research pointed out that the major share of competence and responsibility rested with the eleven Laender, the 36 institutes of higher education, and the 176 faculties or departments. He then expressed the urgent need for close co-operation between Bund and Laender in university planning on the national scale. The Prime Minister of Schleswig-Holstein reported on plans for a Land university law which contained several details that correspond to the Konstanz pattern. The Minister of Education of Bayern outlined six major issues of university reform which, to a large extent, corresponded to the ones dealt with in the KMK document of 10th April:

- replacement of the rector system by a system guaranteeing greater continuity;
- combination of institutes and chairs into larger units (e.g., subject groups);
- adequate participation of all university members including students, in policy organs;
- reform of staff structure;

- reform of the recruitment and appointment system;
- reform of study programmes and examinations.

As a spokesman of Laender policy in general, he accepted the challenge that university reform might be considered by the public as a crucial test of the feasibility of the federalistic system, and on his part challenged the universities to show initiative and willingness for co-operation and reform, lest the state would be compelled to decree the necessary changes.

On the same day, the Land Rectors' Conference of Nordrhein-Westfalen, headed by the Rector of Bochum University, met with the Minister of Education to discuss the detailed proposal for a completely new university administrative structure which the Conference had worked out upon request of the Minister. The essential features of the concept, some of which again correspond to, or at least resemble, the Konstanz experiment, are:

The "rectorate", a small collegiate body at the head of the university (consisting of a long-term, full-time rector, the leading administrative officer, and the four "pro-rectors", i.e. the heads of the permanent committees on finance and personnel, planning and structure, research and teaching) is to be invested with great policy authority. It is, in addition to general executive, planning and co-ordination functions, responsible for the allocation of funds and personnel to the individual subject groups. These subject groups form the second level of university self-administration. They are responsible mainly for the organisation and co-organisation of teaching and research. At the head of each subject group is the "Dekanat", composed of the Dekan (dean) and the chairman of the three permanent subject group committees on teaching, research, and finance. As the "rectorate" decides on the distribution of funds and personnel to the individual subject groups, so do the subject groups on their allocation to individual chairs, institutes and research scholars within their realm. Consequently, the Ministry is to assign budget funds and personnel positions in lump-sum annual allotments to the individual universities. This also implies, following frequent demands and present Konstanz practice, that the professor, when accepting a call, negotiates only his personal salary with the Ministry, all other conditions concerning personnel, equipment and research funds with the university. The university then is expected to see to it that the major parts of funds and personnel for research are no longer committed years in advance as a consequence of "Berufungszusagen" (promises made as condition of accepting a call).

Within the autonomous university, the main "victims" of the reform are the two most powerful levels of authority within the present system: the individual chairholders, and the faculties. As the rectorate is absorbing authority from above (Ministry) and below (faculty), so the subject groups are taking over part of the former responsibility of the faculty and individual "Ordinarii".

The proposal leaves room for the possibility of several subject groups joining to form a faculty again as an instrument for certain tasks of co-ordination, but it is obvious that between subject group and "rectorate", the faculties will at best play a secondary role in the shaping of policy, as at Konstanz.

At the same time, the system seems to imply some transition of power from the "parliamentary" organs (mainly subject group conference and university senate) to the executive ones, though a certain compensation

is achieved through the collegiate composition of the executive bodies and by the strong position of the permanent committees at both levels.

The main parliamentary or representative organs are "Senat", "Konvent", "Beirat" and the subject group "Konferenz". According to the proposals, all are to include non-professional academic staff ("nichthabilitierte wissenschaftliche Mitarbeiter", i.e. mainly assistants) and students. The same applies to the permanent commissions.

The "Senat" is the main legislative body of the university and elects the members of the university commissions; its approval is needed for the university budget and development plans as well as for decisions of principal importance made by the rectorate. It consists of the members of the "rectorate" (without a vote), one professor from each subject group, and representatives of non-professional academic staff and students. The numerical proportion between professors (with voting right, i.e. discounting the rectorate), non-professional staff and students is to be 12 : 5 : 3.

The "Konvent" is mainly responsible for electing the rector and deciding on changes in the university constitution. It comprises the following three groups: all professors and all "Dozenten" up to a number equalling that of the professors, representatives of the assistants and representatives of the students; the numerical proportion is again 12: 5 : 3.

The "Beirat" is to consist of 8 - 15 members from outside the university, appointed by the Ministry upon proposal of rector and senate, to advise the rectorate on matters of principal importance (research policy, development plans) and to serve as a link between the university and society. At the same time, the authors make it clear that the "Beirat" should not be conceived as an organ in which the main political and social groups are represented to control the university: "An institution (i.e. the university) which is expected to offer analysis and control of political and economic groups and powers cannot be subjected to the control of these very groups . A university that is a subsidiary company of the social groups would be the exact opposite of an autonomous institution".

The "Konferenz" is the chief organ of each subject group; it comprises all professors and academic staff with professional qualification ("Dozenten") as well as some representatives of assistants and students. The right of vote for the latter two groups depends on the nature of the matter being discussed. On the whole, the right of the "Konferenz" to initiate policy versus the "Dekanat" of the subject group seems considerably larger than that of the "Senat" versus the "Rektorat".

Of the three subject group committees (teaching, research, and budget), all are supposed to have a professor as chairman plus one professional member and one assistant member. The committee for teaching will, in addition, have one student member.

Of the four university committees (finance and construction; planning and structure; research and junior scientists; teaching and student affairs), all except the one for research are to include student members.

As is obvious from the above outline, the proposal is limited to the structure of university administration and does not cover such urgent problems as curricula and examination reform, new teaching methods, etc. This does not detract, however, from its importance as a whole, since structural reform is considered a prerequisite for efficient study reform. It is the first detailed and coherent concept intended not for one experimental new foundation but for adoption by the four traditional universities as well as the four new or planned ones of the Land Nordrhein-

Westfalen, and the basic principles correspond to the main points crystallised so far on the national scale concerning desirable reform. The Minister has adopted it as a basis for discussion, and the Prime Minister has announced the intention of the government to present before Parliament within a few months a Higher Education Reform Bill that will put into effect the results of the discussion.

The crucial question that must be put to this system, as to any other, concerns the criteria for the allocation of funds and personnel. If the lump-sum allocation from Ministry to university and from university to subject group is to be at all a meaningful improvement over the present system, there must be a clear definition of policy aims and co-ordinated planning with a continuous flow of information and initiative between Ministry and individual scientist. "Konferenz" and "Rektorat" must not only co-ordinate the individual allocations with the policy and development plans in the subject group or the university, but with those of the other universities as well. Thus the advantages of the proposed system can be realised only if each level makes its decisions and plans in full awareness of overall policy intentions, and this presupposes that such an overall policy is worked out in close co-operation between the political administration and the scientific community.

This survey of the recent developments is by no means complete. It may suffice to show, however, that the reform plans developed and discussed over a long period of time now begin to become the object of political action, while at the same time the problems of university reform have changed from topics for academic discussions to major issues of politics. The function of the new universities has been to give an important stimulus to this development by serving as testing grounds for innovation.

ADDENDUM

(December, 1968)

Section E above was drafted in June and has been left unchanged. By the end of the year, the remark about the step from discussion to political action in the final paragraph has been confirmed, but the expectation of a break-through to systematic, coherent and thorough reform which was expressed in the first sentence has proved premature. Higher education has, on the other hand, remained one of the main issues of internal policy and, if one can judge from the mass media, a focal point of public interest. The rapid sequence of plans, activities and events has continued through the second half of the year; student unrest, the threat of the "student avalanche" in the 'seventies, the need for increased inter-Laender co-ordination and for greater participation of the Bund in university expansion and financing, and the political interest of the Laender in meeting the challenge of higher education issues in their domain of autonomy have continued to be the main motivating forces. In some sectors, the general outlines of a solution seem more complicated, further development and final outcome less certain than before.

The policy decision that promises to have the most important long-term effect on secondary and higher education as a whole was made by the Conference of Prime Ministers of the Laender on 30th October, 1968, in a meeting in Hanover. Following a period of joint discussion and preparation with the KMK, the heads of the Laender governments there decided that:

- certain types of "Höhere Fachschulen" (notably Colleges of Engineering, Advanced Schools of Economics, Advanced Schools of Design) were to be developed into institutes of higher education ("Fachhochschulen");
- a new type of secondary school ("Fachoberschule"), eleventh and twelfth school year, was to be established to prepare students for admission into the new "Fachhochschulen".

This is, at least for the time being, the last stage in a long struggle of these schools for improvement in status. Their students normally had ten years of general education (leaving certificate of "Realschule" or grade 10 of Gymnasium) plus two years of practical training before entering the three year course of, for example, a College of Engineering. Good marks at graduation would qualify a student for university study. Since 1965, graduation brought with it the title of "Ing. (grad)", and in some Laender the Colleges of Engineering were distinguished from the larger group of "Höhere Fachschulen" by being designated "Ingenieur-akademien". Still, however, they belonged to vocational schools and not institutions of higher education, whereas the development of engineering training led to greater demands for science and theory in the

curriculum. Furthermore, the graduates were threatened with not being accepted as fully qualified engineers on the international scale, since the Common Market regulations specify that an "Engineer" must have at least 12 years of schooling prior to his professional studies. With the establishment of the two-year "Fachoberschule", which is to include longer periods of guided industrial practice, this requirement is also met.

The significance of this policy decision goes beyond the status and quality of the group immediately concerned. It opens a broad new route to higher education and establishes a range of shorter (three-year) study programmes that are more clearly oriented towards professional needs than the traditional ones and which begin a year earlier (after 12 instead of 13 school years). From the point of view of educational policy and planning, the essential aspects are:

- a better background in general and pre-professional education for this layer of qualified manpower (in the past years, there have been several times as many "Ing. (grad)" from the colleges than "Dipl. Ing." graduates from the technical universities; in industrial advertisements, members of both groups are often invited to apply for the same job);
- the establishment of a broad route to higher education outside the Gymnasium (some Laender are already preparing special "tenth year promotion courses" for qualified graduates from the "Hauptschule" so as to bridge the gap between this short-course form of secondary general education and the beginning of the "Fachoberschule"; this means that students from any of the three general secondary schools - "Hauptschule", "Realschule", "Gymnasium" - may enter institutions of higher education. The graduate from the new "Fachoberschule" who enters the "Fachhochschule" may under certain conditions qualify for transfer to the university; he will, any case, be qualified for university studies upon graduation from the "Fachhochschule").
- the establishment of an attractive alternative for Gymnasium pupils who may transfer to the "Fachoberschule" after the tenth year or enter the "Fachhochschule" directly after the thirteenth instead of going to the university (in this case, however, they will have lost one year, and they will still have to fulfil the practical training requirements during their study period).

The importance of these plans for the "equality of chances" issues is obvious. Their potential impact upon the problem of the "student avalanche" is equally great, but extremely difficult to quantify. Once the system is established, it seems rather certain that the pressure on the Gymnasium will be relieved. On the other hand, a large number of students from the "Fachhochschule" may want to continue their studies at the university and thus add an organisational problem to the numerical one: the university may find itself faced with two groups of entrants, the traditional "Abiturienten" and the "Fachhochschule" students who will rightly expect credit for the studies already accomplished - and all is in a system that so far adheres to the principle that everyone possessing the formal qualification for university studies must be accepted.

At the same time, the "Fachhochschule" concept has been taken up by advocates of a wider range of short-course study programmes of the type proposed by the Dahrendorf Plan. It seems only a question of time before the advanced schools of social work will be promoted to "Fachhochschule" rank; the project of establishing new institutes of the same rank

for the training of administrative personnel ("upper middle layer civil service") is being seriously considered. There are also plans for new types of training programmes for qualified auxiliary or assistant personnel in medicine, law and education. These are all speculations (the first "Fachoberschule" and "Fachhochschulen" cannot be expected to exist before the beginning of the 1969/70 school year), but they indicate the general importance of the decision as well as substantiate the opinion that the decision does not mean a definite solution nor a final stage of development. Much will depend on when and how the new institutions establish themselves in quality, quantity and prestige. This again will depend not only on industry's readiness to accept the graduates - spokesmen have already expressed their concern over the loss in practical training time as compared to the old system for the "Ing. (grad)" - but also on appropriate reforms in the formal requirements and career regulations for the public service.

Another problem, at least from the point of view of systematic consistency and prestige, lies in the fact that the "Fachhochschule" is to be established as a higher education institution ("Hochschulebereich"), but not of equal rank with the university as far as status and entrance requirements are concerned. Already the spokesmen of the engineering college students, who pushed their demands into the headlines last year through spectacular strikes and demonstrations, have voiced the demand for university-type autonomy instead of direct state supervision, the creation of a "comprehensive university" and more provisions for research.

It is too early to make any predictions except that development will not end with execution of the October agreement. In the long run, there seem to be the following alternatives:

- the new "Fachhochschulen" follow the pattern of the teacher training colleges ("Abitur" as entrance requirement; three-year programme for teachers of primary school and "Hauptschule"); these institutes have, in the past two decades, attained a level equal to that of the universities as "Wissenschaftliche Hochschulen" (in some Laender, they have been integrated into the universities);
- the new "Fachhochschulen" establish themselves as a kind of "undergraduate college" for a wide range of disciplines, while the traditional universities limit themselves to what might be called the second (advanced professional qualification; research training) and third cycles ("contact study", i.e. refresher programmes for highly qualified personnel) and to research.

Two other proposals that have become known during the last weeks of the year must be considered in this context. They come from the two bodies that have been set up jointly by Bund and Laender to advise them on educational policy, the WR (Science Council) and the BR ("Bildungsrat", Educational Council), and they concern the relation between secondary and higher education. Though they seem not yet to have been worked out in all detail, the main points have become known and discussed in the press. According to these reports, the BR intends to propose two levels of certificates in secondary education: "Abitur I" after ten school years (i.e. roughly equivalent to the present "Mittlere Reife" at the end of "Realschule") and "Abitur II" after twelve school years (i.e. one year sooner than the present "Abitur", or at the same time as the proposed graduation from "Fachoberschule" and entrance into "Fachhochschule"). The two years between "Abitur I" and "Abitur II" are to allow for a much higher degree of specialisation than the traditional system. Consequently

the "Abitur II" would no longer qualify everyone for any course of study; instead its value would depend on the subjects taken and the level and grades achieved. The parallel to the policy plans for different types of "Fachoberschulen" for the same two years is obvious, but the BR considerations go beyond that in placing also university entrance qualification, the traditional "Abitur", in this group. The designation of the lower certificate as "Abitur I", i.e. by the same term that in the traditional system denoted the decisive step towards prestige and higher education, may duly be mocked as a trick that will fool, no one, but its real importance lies in opening the upper secondary level to everyone, and over two years giving all an equal opportunity to make their "Abitur II" as valuable as possible for admission into the desired course of higher education, be it in "Fachhochschule" or university.

One consequence of the system must be that the new "Abitur II" can no longer have the effect of automatic right of admission to a given institution of higher education. This is where the reported plans of the WR have relevance; they advocate that students should be admitted to the university after 12 instead of 13 years of school, but that admission in each case should be based on the quality of "Abitur II", its relevance to the intended subject of study, and the availability of study places. The pertinent methods and criteria would have to be worked out jointly by university and school authorities.

One may assume that these ideas were known to the Prime Ministers when drafting the agreement on "Fachhochschulen" at the end of October, and the fact that they left the traditional "Abitur" untouched in time and content seems to indicate that this part of the BR and WR proposals, even if published without important changes, is unlikely to be officially adopted and executed soon. Even so, the number of pupils at present at the Gymnasium - and consequently likely to be future university students - simply forces one to foresee that, whatever the principles of the "Abitur" and however optimistically one estimates the "diversion effect" of the "Fachoberschule" on potential "Abiturienten", within a few years the situation will be in many fields of university study what it is today in some: admission will be competitive for limited study places, depending on the marks received in the "Abitur" and certain other criteria. (For medicine, a "numerus clausus" has existed for several years in most places; partly in consequence, similar measures had to be introduced in biology and psychology, i.e. the fields primarily chosen by those refused for medicine.)

In view of this situation, Nordrhein-Westfalen has taken a step that may not seem very imaginative, but has the advantages of a pragmatic approach. The Education Minister's Advisory Council for Higher Education, which was established in 1967 and consists of professors and university administrators, has made quantitative calculations for the annual number of study beginners, their distribution over the various disciplines, the future demand for university-trained manpower, and the estimated development of university capacity (with cautious assessment of the effects of a series of detailed reform measures along the lines of the WR recommendations to increase study efficiency). The main outcome is that - contrary to previous estimates that were based mainly on isolated calculations of individual universities - the universities of the Land should be able to absorb all study beginners until 1975; furthermore, the number of graduates would not exceed the demand for academic manpower. On the other hand, however, the study beginners would not in every case be able to study at the university of their choice,

nor be admitted to the field of study they seem likely to choose according to present trends. In view of the uncertainty in estimating future manpower needs and of the principle of free choice of the individual with regard to his career, the advisors do not suggest rigid dirigistic measures to establish a balance between estimated supply and demand in the disciplines but, instead try to make realistic calculations of the possible effect upon student choice of early and careful information and advice about professional prospects. In technology and theology for instance, the number of study beginners estimated for 1975 is lower than would correspond to estimated need and to capacity, because assigning a larger number to these fields would seem unrealistic in view of the present trend in student choice. For the same reason, sociology and psychology maintain a somewhat higher share than the need for specialists in these professions would call for, at least as far as can be estimated today. The important point is that the recommendations[1] of the advisors finish with a table that gives, in terms of the number of study beginners, the 1975 capacity target for each discipline at each university of the Land. While it seems safe to say, as the advisors themselves pointed out, that most of these numbers will have to be corrected every year or so, this does not detract from the importance of such guide-posts for Land policy in university development, so long as the total number and the numbers per discipline are not completely out of proportion.

At the same time, a project of the Volkswagen Foundation to recruit staff and operate an integrated "University Information System" is being prepared. The organisation is to have an outpost in every university, an office at the Land Level and a central office. The main purpose is to improve the collection and evaluation of statistical data on students, the academic programme, university capacity, etc. The KMK has decided to assign a working group the task of forecasting the need for teachers until 1980, and Federal as well as Laender authorities are giving priority to projects of more sophisticated forecasts of future needs of qualified manpower. Altogether, these activities seem to indicate a change from a rather rough-hewn policy of quantitative expansion towards qualitative analysis and differentiation as a basis for more sophisticated guidance and planning.

Another attempt to relieve the universities from problems caused by overcrowding is being made by one of the two national television networks, which towards the end of 1968 announced that it would, in co-operation with the universities and the KMK, prepare a programme of standard courses in certain subjects (sciences, mathematics; eventually also education, sociology, et al.). Regular broadcasting would begin in 1970 and would soon be expanded to several hours every morning. (A "Telekolleg" in Bavaria has already operated with considerable success for some time, but does not offer university programmes.)

Internal university reform - better organisation of study programmes, more efficient counselling and tutoring, introduction of interim examinations, etc. - has continued its gradual progress without much spectacular success or publicity. With regard to the reform of university organisation and self-administration, the matter is different: during the last months of the year, there have been a series of reform bills before Laender

1. Planungsbeirat des Kultusministers des Landes Nordrhein-Westfalen für die Entwicklung des Hochschulwesens, Empfehlungen I. (Advisory Council of the Minister of Education of the Land Nordrhein-Westfalen for the Development of Higher Education, Recommendations I - The Development of Academic Studies at the Universities of Nordrhein-Westfalen until 1974-75), published by A. Henn Verlag, Wuppertal, October, 1968.

Parliaments, and another series of reform plans and proposals presented for public consideration. They all agree on a number of principles that have already been discussed in detail in the main body of this study: replacement of the one-year rector by a rector or president with longer tenure (from four years to permanent); concentration of authority within the university at the top (rector or president) and at one lower level (subject group) at the expense of the traditional faculty and individual chair-holder; more co-ordination and greater flexibility in the allocation of funds and personnel; a greater share of responsibility and policy influence of non-professorial academic staff and students; establishment of some kind of board that includes non-university members from public life. In some respects, however, where one might have expected agreement, the situation has become more complicated. A few examples may suffice for illustration:

- The Land government of Hessen drafted a new university bill that went further in meeting the student demand for "one-third parity" than any other Land or non-student group seemed willing to go. That it met with strong opposition from the majority of professors was to be expected, but it was also denounced by the students as "pseudo-liberal" and "dirigistic". The sociology Seminar of Frankfurt University was occupied by radical students who added a new interpretation to the "one-third parity" demand: a share in the institute's research funds for independent student research. An interesting sidelight is that the draft of the university bill was based largely on proposals of Frankfurt sociology professors who were considered among the few accepted by the radical students.
- The Land government of Nordrhein-Westfalen sent a draft of a higher education bill to the university rectors and the main student groups. It seems it fell far short of student demands for participation, so their opposition might have been expected. It was, however, also denounced by professors as autocratic, dirigistic and a threat to university autonomy. According to published information, the criticism was based on provisions for co-ordinated planning and development, the establishment of a University Council on the Land Level, and state influence (e.g. in the appointment of a long-term rector or president, as a balance to greater university authority over the distribution of lump-sum annual budgets). An interesting sidelight is that the rector of Bochum University, who was mainly responsible for the reform proposal discussed at length a few pages before, was one of the most outspoken critics of the draft. (According to newspaper reports, he called for a united front of students and professors against the threat of state manipulation, whereupon a Bochum student speaker replied that it was of relatively little interest to the students whether they were manipulated by the professors or the Ministry.) The draft was not presented to parliament as originally intended in November. The Prime Minister explained that the government had been asked by the WR to withhold it until the WR proposals were published in order to maintain opportunity for uniform development in all Laender. (The opposition, who had presented a draft of their own, were quick to accuse the government of indecision.)
- The WR proposals came out in early December. They advocate the principles cited above and are rather on the conservative side with regard to student participation. Only a few days later, the WRK (Rectors' Conference) came out with proposals of its own, which were, at least in part, a counter-attack against those of the WR.

The WRK limits itself to a discussion of the organisation of university-self-administration as a whole, promising a second part dealing with the organisation of the parts (institute, subject group, faculty) in the spring of 1969. It suggests that it be left to the individual university to choose between rector, permanent president or collegiate body ("Direktorium"); it advocates the formation of subject groups, but also wants to maintain larger "faculties of a new kind" as an intermediate level of academic self-administration. The main criticism of the WR and other proposals is that a state appointed president would be the executing manager of state policy and thus a threat to university autonomy. (The "President", foreseen as one possibility by the WRK, is elected by a large "Konzil" of university members; he need not be a university professor, but is to be supported by a number of professors elected as "Vice-Presidents".)

It would clearly go beyond the scope of this survey of recent developments to attempt an analysis of motives for proposals, counter-proposals and opposition. It may be of interest, however, to retain a few points:

- There seems to be no hope of satisfying the demands of the radical student groups whose aim is a change of the social order rather than a reform of the university;
- Certain points of conflict within the camp that the student opposition calls "establishment" have emerged more clearly: the universities are afraid not only that the state might grant the students too much influence; they fear also that under the headings of co-ordination, efficiency and rationalisation, state authority might undermine university autonomy. They therefore begin to oppose the plans for a strong, long-term president and a corresponding weakening of the position of the traditional organs. The argument is, as the WRK pointed out, that a long-term president would act as executor of state policy rather than as representative of the university corporation. This is an interesting example of a basic difference in concept: the state side views the university as a complex organism for teaching and research that needs independence and strong, flexible management; the professional side views the university as a corporation of smaller bodies (faculties) and individual scholars run by the corporate will of these smaller constituent units who need protection against a strong central administration as much as against direct state interference. This position may well be influenced by the individual professor's interest in safeguarding his chance to bargain for more funds and personnel with the Ministry directly, and by the professors' interest collectively in maintaining their influence upon university politics through faculty and senate. Here again the strained relation between the worlds of politics and sciences is exposed.

Finally, mention must be made of the recent progress in Bund-Laender negotiations on university planning and financing. As a first step, the mechanism for joint assessment and financing of "centres of excellence" ("Sonderforschungsbereiche") has been developed as described above. Furthermore, bills to change the Basic Law (Constitution of the Federal Republic) which are at present before Parliament foresee:

- a "framework competence" in educational planning and in higher education for the Federal Government, and
- definition of a small number of "common tasks" for joint Bund-Laender financing, including university expansion.

These measures are not understood to imply a change in the principle of Laender responsibility for the educational system; there is some fear, however, that this will be the result if approved. Once the Federal Government has set up an efficient administrative machinery, it may prove difficult to draw the line between "framework" and detail, or between educational planning and educational policy.

F. THE PROCESS OF INNOVATION AND THE NEW UNIVERSITIES

To the above survey of recent developments, two interesting and somewhat confusing observations may be added:

- In its main points, the movement for reform of university administration and organisation follows the pattern set by Konstanz and other new universities; the same may be said for certain features of Bochum and the Medical Faculty of Aachen in relation to general reform measures and plans (inclusion of technology; counselling office; organisation of department; reform of medical studies, et al.);
- In the general debate, the test function of the new universities and their experiences are seldom referred to or commented upon.

The second point may be due in part to university individualism and political federalism, but the main explanation for the two conflicting statements seems to be elsewhere: Konstanz, Bochum and Aachen have not really invented the innovative features, but rather were the first to put into practice what, at the time, could be distilled from the general discussion as the main points of agreement among reform advocates, be they within the universities, the WR, or the general public. Had not innovations with respect to subject groups, president and lump-sum budgets been introduced at Konstanz, they might well not yet be practised. In a sense, the fact that these reform measures were adopted first by new universities is not so much a proof of the university's ability to reform but a reaction to its general inability to do so: it was disappointment in the immobility of the old universities that led the WR and others to concentrate their hopes on trying out the new features in a few new foundations. The decisive factor then was, at Konstanz as at Bochum, Aachen and elsewhere, that a group of reform-minded professors were selected to draft the foundation plans, and these plans were adopted by the state. Thus the decisive contributions were made by university professors, but on the basis of state support and not by the university corporation as such, be it the majority of professors in a given faculty or university, or be it a committee for innovation of the WRK.

In the meantime, willingness for self-reform within the individual universities has increased in the face of increasing pressure from public, state and rebellious students. At the same time, however, reform plans that a few years ago would have seemed ultra-progressive are mocked by the students; assemblies to discuss new by-laws are boycotted by the student representatives and broken up by student "go-ins"; and the same state representatives that for years urged the universities to speed up self reform now encourage them not to be too lenient in calling in the police and expelling radical student agitators.

In view of this situation, the state side seems to be determined to take a greater initiative. Land university bills are before a number of parliaments; they are criticised by professors and students on different

grounds. On the whole, however, it seems that an acceptable compromise with the professors may be worked out. The real disappointment for anyone who cherishes the principles of political autonomy of the Laender and university autonomy in self-administration is, however, that:

- the universities have not been able to demonstrate their willingness and ability for timely reform;
- the Laender have so far not been able to agree on a common concept.

There was some hope that the WR proposals would provide a pattern that all Laender and universities could accept without losing face, but from what has become known of its contents and the first reactions, several Laender will probably consider it too conservative with regard to participation of non-professional staff and students, and the universities as represented by the WRK find it too authoritarian in its provisions affecting the traditional powers of the collegiate professional bodies.

The type of innovation discussed so far has been in the field of university-state relations and university self-administration. The key term used in this discussion is that of university autonomy as an essential pre-requisite for creative academic work. There seems to be some ground for the belief that university autonomy is understood to imply the individual professor's role in the collegiate bodies for university policy as well as in drafting "call proposals", selecting candidates for "Habilitation", and securing irrevocable funds and personnel for his institute.

The other areas of innovation - research organisation, reform of study programmes and content - claim almost no public interest, though they may in the long run prove more important than the administrative issues, and gradual progress has been made. Success depends largely on the attitude of the institutes and collegiate bodies (e.g. faculties) within the universities. Again, the new universities have taken the lead in many ways - inter-disciplinary programmes, study plans, counselling offices, "contact study" programmes, common use of facilities, collegiate directorship for institutes, et al. - but again they are considered as being only the first to put into practice what others were thinking of. If such innovations can be introduced strictly in the domain of teaching and research without affecting the distribution of authority within the university - such as responding to DFG proposals for new "growing point" projects or changing the subject matter of lectures or seminars - the step from general acknowledgement to actual practice can be taken rather quickly. Where new forms of co-ordination and co-operation are required, the process is much slower (co-ordinated development of study plans). Where state administration is involved - as in the development of new budgeting procedures or new degrees with corresponding changes in public service career regulations - the slowness of decision-making and obtaining the necessary agreements from parliaments and faculties or senates make for a very tedious development, even more if co-ordination beyond the individual Land is required. On the other hand, a firm policy decision reached on the inter-Laender level - such as the Prime Ministers' agreement on "Fachhochschulen" in October - may pave the way for relatively speedy reform of great importance on the national scale. The danger for university autonomy, and perhaps also Laender autonomy with regard to higher education, seems to lie in the temptation to enforce and speed up university reform by a similar procedure on the Land, inter-Laender or Federal level. This in turn points out a twofold danger with regard to autonomy of the university as well

as the Laender in cultural and educational policy: the responsibility of reforming university administration originally rests with the universities themselves and the individual Laender governments. They have set up, jointly or separately, co-ordinating mechanisms for tasks of that kind through KMK and WRK. If vital questions such as a structural change in higher education are solved by another body on the national scale, such as a conference of the Prime Ministers, this indicates that the bodies originally responsible have proved inefficient. In view of the present dilemma in university reform, there is a growing tendency to demand a similar process for reaching a national solution. Whether this process is sought through constitutional change in favour of the federal government or through another agreement of the Prime Ministers, the challenge to university autonomy will certainly, and to Laender autonomy probably, be equally serious in the long run.

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